ON SCENE

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United States Coast Guard

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CHIEF, OFFICE OF NAVIGATION SAFETY
AND WATERWAY SERVICES
UNITED STATES COAST GUARD
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MAY 10 1993

Dear "On Scene" Readers,

In this issue I would like to emphasize the importance of **readiness** in the SAR community. Coast Guard units performed in an exceptional manner during the March 1993 storm which ravaged the Gulf and Atlantic Coasts.

Many of you in the Seventh, Eighth and Fifth Districts were involved at some level in preparation for or execution of search and rescue cases resulting from this storm. The First District, because of advance warning, conducted "preventive" SAR sorties, encouraging many fishing vessels to return to port well before the storm's onslaught. To all those who participated, congratulations on a job well done.

This issue of *On Scene* contains the "44' MLB STAN Team Report Card." I encourage all of you to spend some time reflecting on the findings of the STAN team report. Without question, the reliability of our resources is crucial to successful completion of the SAR mission. Attention to routine maintenance and training is the best guarantee for success when the next "storm of the century" hits our shores.

Sincerely,

W. J. ECKER
Rear Admiral, U.S. Coast Guard

ON SCENE 1/93

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*****

RADM William J. Ecker
Chief, Office of Navigation Safety and Waterway Services

CAPT Michael F. Cowan
Chief, Search and Rescue Division

ENS Patrick J. St. John
Editor

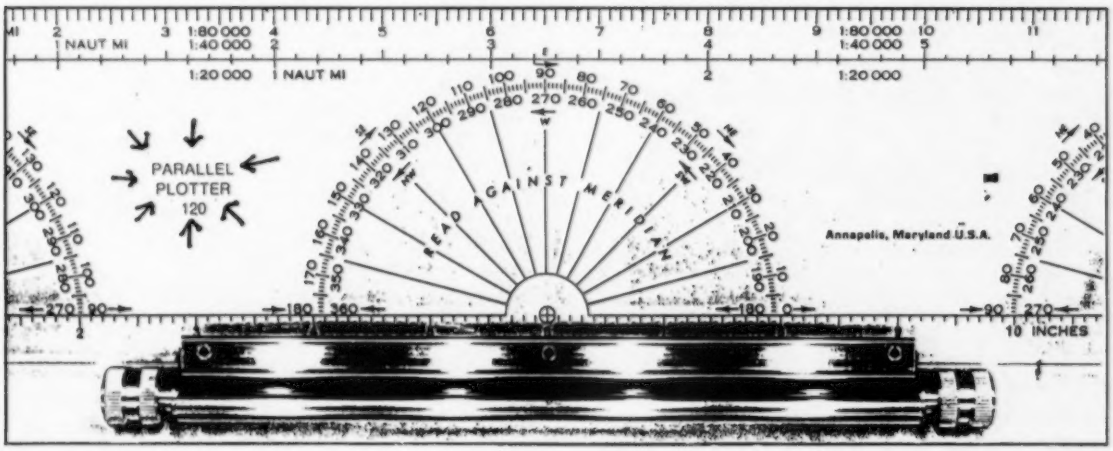
COVER: File Photo; Coast Guard models displaying the latest in cold water survival gear?

ON SCENE is a quarterly, authorized, special interest publication, produced by the Office of Navigation Safety and Waterway Services for members of the U.S. Coast Guard and the SAR community. Editorial content is not to be considered as authority for official action, nor as record material. Individual views and opinions expressed do not necessarily reflect those of the Department of Transportation or the U. S. Coast Guard.

Letters to the Editor

Dear On Scene Editor:

As pointed out in several letters, we (the #¢*#@%#'s here at Headquarters) were incorrect in our reply to BM2 Anderson and QM2 Steve Carney, it is a parallel plotter. Sorry!



Dear On Scene Editor:

My wife Jean and I once returned from a 4 day weekend assisting with patrols and watchstanding at Aux-Op Station Alpena. The "North Country" hospitality couldn't have been better. From all the local flotilla members who made us feel right at home with berthing, specialized equipment, food and friendship, to the excellent OIC, BMC Betters. He is one of the many concerned and friendly OIC's that the Auxiliary has.

While we were there during the "Brown Trout Festival," we did some safety patrols and Public Affairs at the State Dock. We had 2 assists, one a short 15 minute tow to the dock, the other a 3 1/2 hour tow into Alpena from the N. E. side of Thunder Bay Island – 18 miles out – in 4 to 5 foot seas with thunderstorms and lighting. (The local auxiliarists do this on a regular basis in their 20 to 24 foot facilities.)

The private boaters really appreciate the Auxiliary as the alternatives are few: no commercial assistance, light boating traffic (no response to MARBS), and no regular CG resources readily available. The area is very beautiful and scenic, but with 58 degree water temperature on July 20, when Thunder Bay lives up to it's name and seas go from flat calm to 6 or more feet in a matter of 2 to 3 hours, it can also be very dangerous to boats that are disabled.

When it kicks up or fogs in, the local Auxiliary is called on to assist vessels in trouble. The closest Regulars are Tawas (3 to 5 hrs. away) or St. Ignace (5 to 8 hrs away). There is no 41' UTB or 44' MLB nearby to help out if you run into trouble. The only other nearby "safe harbors" are Harrisville or Presque Isle, both a good 30 to 40 miles away from Alpena along some dangerous, rocky, and unforgiving Lake Huron shoreline.

Station Alpena has 40 to 50 cases per year, but like our other Aux-Ops stations (Grand Maris, Munising and St. Josephs), the Auxiliary is the only resource the boating public can rely on. The local flotillas and divisions supply that assistance in the true spirit and meaning of the Coast Guard motto: SEMPER PARATUS.

Station Alpena, my hat is off to all of you, keep up the good work.

AUX-OP STATION ALPENA
Robert C. Colby, DSO/OP

Dear On Scene Editor,

I don't share CWO Hyde's opinion that a float coat is a type III PFD only and not a suitable work jacket. The blue float coat is a durable, very reasonably priced warm coat that looks good with a work uniform and doesn't get ruined the first time a crewmember backs into a greased wire rope. When choosing a blue coat for general working wear, this coastal buoy tender CO would prefer one that just might save a shipmate's life should unforeseen events land him in the water.

Of course there are times when a blue float coat is not an appropriate substitute for a PFD, an orange float coat, or a "Mustang" suit. With over 21 years of operational experience, I can figure that out for myself and my unit, as can every CO and OIC I know. By restricting the purchase of blue float coats, G-NRS has -- in a classic case of micro-management -- taken an option away from the fleet that added a measure of safety by having our people in float coats all the time if we so desired. No wonder the joke goes, "I'm from Headquarters and I'm here to help you!"

D.S. COOPER
Chief Warrant Officer
United States Coast Guard

CWO Hyde's response: I'm flattered you think one CWO's opinion can change the Coast Guard's policy on allowing blue float coats. Furthermore, orange float coats wash the same as blue float coats. Remember "I'm from Headquarters, I'm here to help you."

Dear On Scene Editor,

The 3/92 Issue was the best one yet. I look forward to each issue and read them cover to cover. I especially like the unusual SAR cases stories, keep up the good work. The thing I question, is why it takes so long for delivery.

Robert C. Colby
DSO/OP
9th Central Region Aux.
Saginaw, MI

Thank you for the kind words. As you may or may not know 3/92 means the third issue of the year, not the third month. However, you are correct in saying it takes a long time to receive the magazine. It takes up to six weeks for the Government Printing Office to get the rough copy ready for printing. At that point it is out of our hands and up to the Printing Office and the U.S. Postal Service.

Fishing Vessel Afire

By: BMC S. C. DUNNAWAY, CG STATION FREEPORT

On 6 January 1993 Coast Guard Station Freeport received a call on channel 16 VHF from the master of the tug KITTY FISHER reporting that a shrimp boat named GULF STAR was on fire at mile 401 of Gulf Intra Coastal Waterway (GICW) just west of the Brazos River Locks. The master of the GULF STAR was the only person on board when the fire started. He quickly determined that the fire was so intense that his fire extinguishers would be ineffective. The master of the GULF STAR was able to ground his vessel on the north bank of the waterway, and position himself on the stern to abandon ship. Fortunately KITTY FISHER picked him up, saving him from a cold swim. The KITTY FISHER alerted the Coast Guard.

Since it was normal business hours, the B-1 duty crew was on board the station, arriving on scene in approximately seventeen minutes. The vessel's interior was completely engulfed in flames. CG 41356 came close aboard and started to cool the exterior of the burning vessel with the fire monitor. After a short while the steel vessel cooled enough for the crew to start attacking the fire with the 1½ inch fire fighting hose, while the fire monitor protected them.

Since this shrimper had been converted from an old oilfield vessel, it did not have the normal layout of a fishing vessel. The galley was below decks forward, accessed only through the crew's berthing, which was burning intensely. The firefighting team progressively moved through the burning vessel to get to the "hotspot".

Three members of Freeport's volunteer fire department and their equipment were ferried to the scene with Station Freeport's RIB. They wore "bunker gear" and self-contained breathing apparatus, better enabling them to reach the depths of the vessel where the fire was still burning out of control. A portable de-smoking fan greatly facilitated the fire fighting effort by allowing the hose teams to see well enough to direct the hose streams towards the base of the flames. Fortunately the vessel's fuel tanks remained intact.

After 1½ hours the fire was under control, overhauling and dewatering efforts got underway. When the vessel was safe, an investigation team from MSO Galveston determined that the probable cause of the fire was a faulty coffee pot in the galley. The master of the GULF STAR arranged for another fishing vessel to tow the vessel back to it's moorings, so he could begin the task of rebuilding his vessel. Although the steel vessel was gutted, he was grateful for the Coast Guard efforts. It left him with a salvageable vessel to continue his livelihood. Additionally, the firefighting team brought this situation under control before the vessel could pose a threat of closure to the commercially important waterway.

Editor's Note: There was no mention of personal protective gear worn by the crew when fighting the fire. The Marine Safety Manual COMDTINST M16000.11 Coast Guard Firefighting Policy Chap. 8.B-8.C.2. reads:

The Coast Guard has traditionally provided firefighting equipment and training to protect its vessels and property..... The Commandant intends to maintain this traditional "assistance as available" posture without conveying the impression that the Coast Guard is prepared to relieve local fire departments of their responsibilities..... Generally, Coast Guard personnel shall not actively engage in firefighting (on other than Coast Guard units) except in support of a regular firefighting agency under the supervision of a qualified fire officer..... Coast Guard personnel shall not engage in independent firefighting operations, except to save a life or in the early stages of a fire to avert a significant threat without undue risk..... Coast Guard personnel employed in firefighting operations shall be properly trained and equipped for the task they are assigned. Coast Guard involvement shall be kept to a level commensurate with available leadership, experience, training, and equipment...o/s

Politics Aid in SAR Case

By: LT. B. Flory USCGR CGD17

Since the first agreement between the U.S. and the U.S.S.R. on Maritime Search and Rescue was signed in 1987, the Seventeenth District Search and Rescue Branch has continued to work with first the Soviets, and now the Russians, to improve joint SAR operations. A recent case involving Russian citizens overdue on a transit to a U.S. destination demonstrated the value of efforts to improve joint operations.

On 29 June 1992, 80 Russian natives set out in four open wooden skiffs, 25 to 30 ft. long, powered by outboard motors. The skiffs towed four, 20 ft. traditional, walrus-skin open boats, on a 50 mile transit from Provideniya, Chukotsk Peninsula, Siberia to Gambell, Alaska, on St. Lawrence Island in the northern Bering Sea.

Two boats reached Gambell, on 30 June, with seventeen aboard. The rest were apparently delayed by weather, and reported to the Seventeenth District Command Center as overdue on 1 July.

The 63 missing people were evenly distributed among all the boats, equipped in the manner normal to most of the native seafarers and hunters in the region. They carried a supply of water, raw meat for rations, a drum of gasoline, warm clothing, and some luggage for their trip. No radios, signalling devices, lifesaving or survival equipment were carried.

Initial search efforts concentrated on the water area adjacent to St. Lawrence Island. Much effort was spent by command center personnel trying to communicate with the Russians to coordinate search efforts and obtain permission to enter their air space. TELEX messages direct from the command center in Juneau to Vladivostok RCC were used, but proved slow, taking from three to four hours to receive a reply. Requesting permission through Anchorage Air Traffic Control Center was a more timely process, but involving more people and a greater risk of misunderstandings. Ultimately, permission was obtained, search areas shifted to the higher probability area near the Russian coastline.

This case is significant, it marks the first time since World War II that U.S. military aircraft were granted permission to search the Russian coastline and airspace.

In an attempt to coordinate our efforts and maintain the flight safety of all search aircraft, the command center passed along search plans to the Russians, and requested search plans from Vladivostok RCC. Actual search area information from the Russians was never received.

After the first day of searching, Vladivostok RCC reported that they had located four of the missing boats, with 42 POB. Two boats with 21 POB remained missing. No Russian aircraft were involved in the search due to poor weather. One Russian patrol boat, three Russian ships, and four native boats were said to be searching. This sharing of search results, a normal process in other cases, marks a significant improvement in US/Russian SAR operations. In the past, communications were primarily one-way, us to them.

Efforts the second day centered on the Russian coastline. Late in the day, a C-130 located a group of people on the beach at Mechigmenskiy Bay. Unable to confirm their identity as the overdue party, Vladivostok RCC dispatched a Russian helicopter confirming the people spotted by the C-130 were the missing 21 natives. They beached their boats for repairs, no distress was apparent. Due to the complicated communications however, this information was not received by the Command Center until search efforts were underway on the third day.

Command Center personnel coordinated a three day international search effort that involved Vladivostok RCC, Khabarovsk Traffic Control, Russian Frontier Guards, Anchorage Center Air Traffic Control, Elmendorf AFB RCC, 11th Air Force, Alaska State Troopers, local Gambell officials, Air Station Kodiak, the U.S. State Department, and Flagplot. Search efforts by Russian ships, patrol boats, aircraft, and C-130s from Air Station Kodiak resulted in all boats and people being located. ***ols***

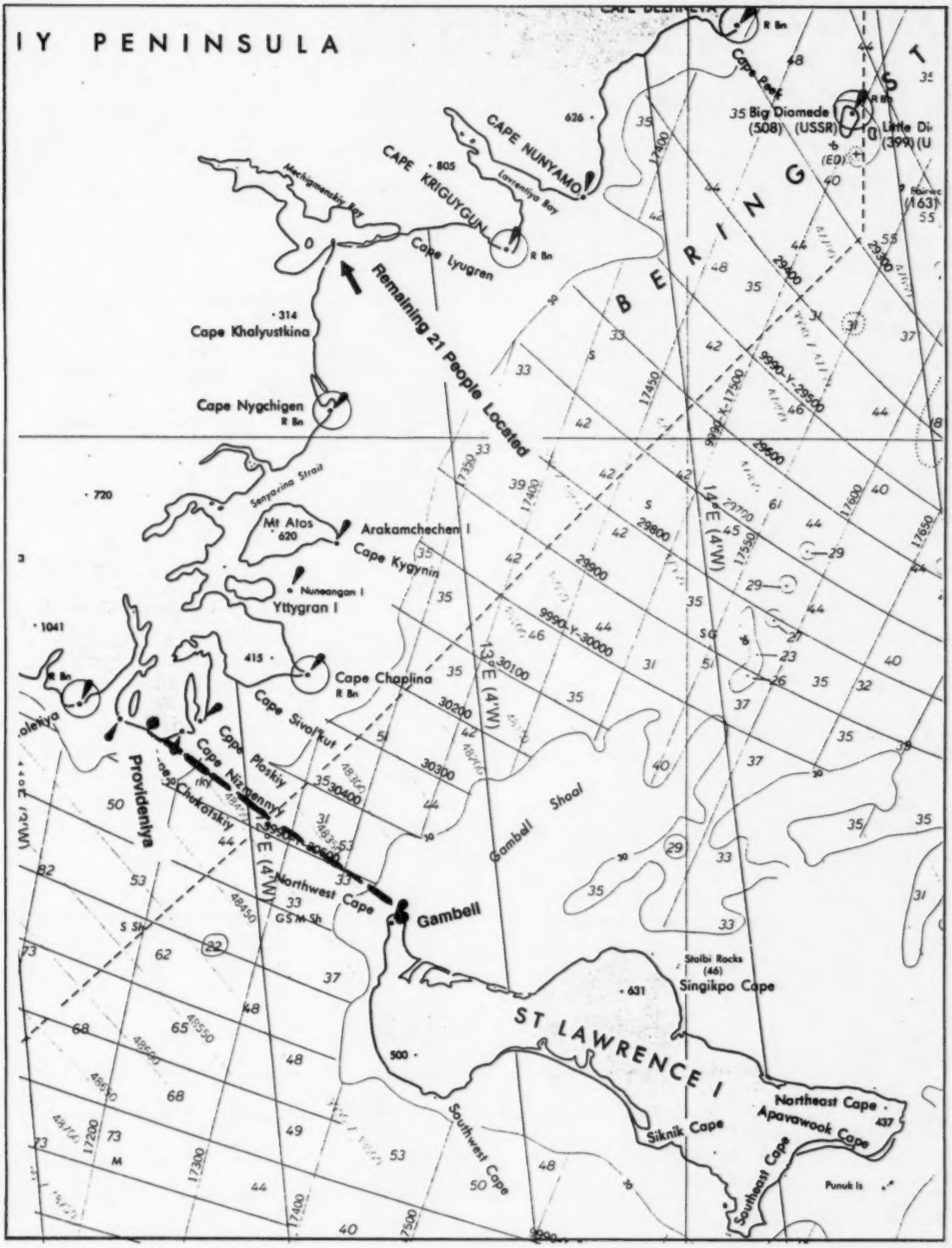


Figure (1) Intended course of wooden skiffs. Final two boats with remaining 21 POB located farther north on Mechigmenskiy Bay

White-Water Nightmare

By: CWO Mark Hyde G-NRS

April 3, 1993 will be a day I will not forget. I just stepped out of a hour - long, hot bath and am recalling the events that happened to prompt this article.

First I want to give you some background to the white-water nightmare. Coast Guard Headquarters is a stressful job, it requires long hours, short deadlines, and sometimes total frustration with the bureaucracy. This is why many of us can't wait for the weekends to enjoy life.

About a month before, I had planned a camping/white-water rafting trip down the Cheat River in Albright, West Virginia with a couple of the people here in HQ. This is a river I had rafted in May of 1992 and was convinced I could easily navigate it in my new Avon river raft. The last time I rafted the Cheat, the river gauge was at 3.5 feet and the 12 mile run on the river was relatively easy, although, it did have 3 Class IV and 2 Class V rapids.[1]

I have white-water rafted over one hundred different rivers in North America and New Zealand, so I feel my white-water experience level is relatively high. The others I convinced to go along had some white-water canoe experience and were good swimmers. We were ready for a fun-filled weekend.

When we were driving to the river I noticed the creeks that feed the river were swelling. I should have taken that as a bad sign, but I was too pumped up to use common sense. This river was also much smaller than others I have rafted, so I thought it would be a piece of cake.

That first night before the trip we were greeted with snow and 24 degree temperatures. The water temperature was about 42 degrees. The river gauge was at 9 feet and we were warned by the locals about rafting the river when the gauge was above 7 feet. There had been a significant amount of rainfall the month prior and about 4 inches the night before. We planned an alternate trip and fully intended to avoid this area of the Cheat River.

When we woke up, the air temperature was 30 degrees and snowing lightly, but it was forecasted to get to 45 degrees. We were ready to get on the alternate white-water run. We noticed the river had gone down a bit and checked the gauge. The gauge read 6' 10", our cue for a wild but safe white-water trip. It was back to the original plans.

After shuttling our trucks to the pickup spot, we dressed for the river and conditions. This included dry suits, white-water helmets, polypropylene and fleece undergarments. We also wore Type V[2] white-water PFDs that provided over 28 pounds of buoyancy.

We started down the river and about 1/2 mile down the river we encountered the first 3 ft. souse hole.[3]

[1] *Rapids classification*
Class I - very easy
Class II - easy
Class III - moderately difficult
Class IV - difficult, waves powerful and irregular, dangerous rocks, boiling eddies, long very demanding rapids, passages difficult to see, requires precise maneuvering.
Class V - very difficult, long and very violent rapids following each other almost without interruption, river bed extremely obstructed, big drops, violent current, very steep gradient
Class VI - extremely dangerous, nearly impossible, involves substantial hazard to life

[2] *Type V PFD's are special use devices, made specifically for special uses or conditions. Varieties include white-water, board sailing, work vests, hybrid PFD's, and others.*

[3] *Souse Hole (Hole) - A hydraulic that is formed around downstream side of a rock or an obstruction. Water actually runs upstream towards obstruction then down to the bottom. Some souse holes have held 40 foot river rafts for over 2 hours.*

Mark O. Hyde accompanied by LCDR Monteith, Mike Monteith Jr., ENS Patrick J. St. John

When we hit this hole we lost our first man over the side, he swam over to my side of the raft with sheer panic on his face and I helped recover him. Everyone was pumped up by then. I was concerned. Even though this was a small hole, it held the raft longer then I was use to and filled it full of water. This went on for the next 6 miles. Paddling the waterlogged raft over to the side of the river to recover people and empty the water out of it, drained most of our energy. We had all been out for five or six swims each.

At this time I knew we were well over our heads, but there were no roads or an alternate way out for six more miles. Our only avenue was the river. I knew the big white-water was still ahead. The raft plunged into a six foot souse hole and hung on the lip. White water washed everyone out. Two of us were recycled through the hole at least 4 times. I knew it would eventually let us go but we were taking quite a beating and getting exhausted sucking air from the foamy water. Mother nature finally gave us a break and released us from the hole. I did not see anyone else because of the high waves and my blurry vision from lack of oxygen.

I knew everyone had departed the raft and I finally saw the raft drifting about 100 feet away. Our ride home was floating away. I fought my way to the raft through moderate white-water and held on. I attempted to board the raft but could not make it over the tubes. After four tries, I abandoned that idea and worked my way around the raft to retrieve a line that was tied to the stern cleat. I then swam to an eddy and worked my way to shore. The force of the current on the raft was going to pull me back in the water. I managed to wrap the line around a rock just before giving up on the raft. I fell back on the rocks and closed my eyes from exhaustion.

This was river mile 8, we still had 4 more miles of the big stuff. Everyone else was on the other shore about 1/4 mile upstream when I gathered my senses. We had lost all but 2 paddles. My companions had to swim to the raft. There were no standing waves in this sections but the current was swift. Everyone made the swim but even starting 300 yards upstream they ended downstream on the raft side. We had holed our dry suits with 4 to 6 one-half inch holes on rocks along the river and lost a dry bag that was tethered to the raft. We gathered everything else and emptied our raft of water.

The exhaustion had overwhelmed us, we decided to line (using an attached rope, guide the raft through the rapids from shore) the raft down any waves of significance. Trouble wasn't far away. About 2 more miles of moderate white-water filled our raft. With only two paddles we were at the mercy of the river. A series of big ones engulfed the raft and sent us out for our final swim. We all swam as hard as we could to get to the shore with no luck.

I noticed a sudden drop in the river. We could not avoid "The Colosseum," a 14 foot standing wave with a hole that can hold a 25 man raft. It buried us in white-water and spit us out about 60 feet down the river. Total exhaustion is the best word I can express for the state I was in. The only hope for life was to get to the side, and quick. I gathered all the energy I had and the river was forgiving, it offered one last eddy before another 3/4 mile of hell. We all made it.

The raft took another route and the stern line hung on some rocks in class IV white-water. It could not be retrieved. This remote area had sheer cliffs and sticker bushes. There was only one way out and that was a three-mile trek through some of the roughest country I have ever experienced. I was concerned with hypothermia and knew that it would be tough to survive a 24 degree night on the river. Fortunately one of the younger members climbed higher to a ridge and found a marked trail out. We had lost a $5000.00 river raft and under water camera, but bruised and beaten, we all made it.

You are now asking why I wrote this article. I wrote this because dry suits work! Even with 6 one-half inch holes in them they saved our lives. The water that did get into them, warmed up and was not to uncomfortable. As the Rescue and Survival Systems Manager for the Coast Guard, I send out monies annually to procure survival equipment. You need to buy proper protective equipment. I contacted the Maryland, Virginia, and West Virginia Department of Natural Resources and learned that 8 people have died in white-water accidents in the month prior to our adventure. Dry suits, proper PFD's, and other personal protective gear kept the number at 8.

P.S. If you see an empty Avon white-water raft floating on the Cheat River please return it to me.

Editor's Note: Some of the more recognized rivers CWO Mark Hyde has rafted include the Colorado, Snake, Klamath, Rogue, and McKenzie.

Editor's Comment: I was there, and had serious questions about my future during the "final swim." o/s

"No Call Unanswered"

By: LCDR Bob Day, COMMSTA Boston (NMF)

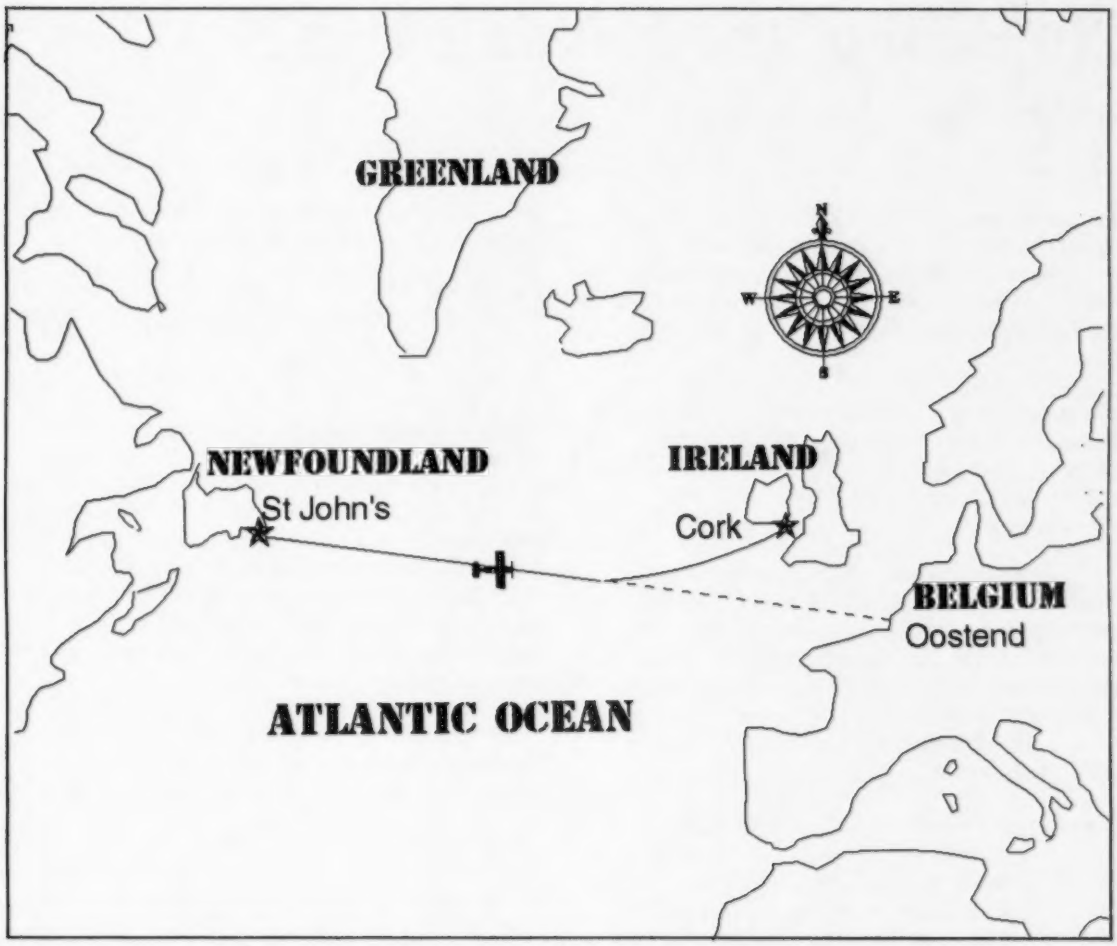
Coast Guard Communication Station (COMMSTA) Boston, with its motto "No Call Unanswered", is frequently involved with interesting and unique SAR cases. Early in the morning on 21 January 1993, a very unique case involving a commercial aircraft and SAR organizations throughout the North Atlantic was expertly handled by COMMSTA Boston. This case not only reinforced COMMSTA Boston's motto, but also further demonstrates the effectiveness of the overall CG communication system as a critical SAR resource.

Watch section "A", led by RM1 Rudy McGwin and RM2 Roger Steinkamp, had been on watch for approximately 7 hours. The tempo of operations was relatively slow with only two ships copying the FRTT (NMF Radio Teletype) broadcast and few CG aircraft airborne. At 0455Z, the air to ground position manned by RM3 Leslie Miller monitored a Delta Airlines 767 calling COMMSTA Miami on the CG air/ground frequency 5696 KHz. RM3 Miller immediately responded to the call, knowing COMMSTA Miami's receive and transmit assets were severely degraded as a result of Hurricane Andrew. The Delta aircraft, Flight 116 from Miami to Germany, advised RM3 Miller he had intercepted a MAYDAY on a VHF-AM aviation frequency from a twin engine Cessna 404. The Cessna, call sign N677X, with 2 POB was enroute from St. John's, Newfoundland to Oostend, Belgium. The aircraft was experiencing engine failure in the port engine and losing altitude. The Cessna's position was 49-20N 032-52W, approximately halfway along the intended route.

The COMMSTA Boston watch immediately notified the First District Operations Center of the situation. CCGD1 (opc) established a conference call between COMMSTA Boston, the Atlantic Area Operations Center in New York, and Canadian Rescue Coordination Center (RCC) Halifax, Nova Scotia. RCC Halifax took the lead on the case and requested that COMMSTA Boston have Delta 116 contact them on 5718 KHz. Delta 116 was unable to establish communication with RCC Halifax. COMMSTA Boston continued communications with Delta 116 and relayed current information to Halifax. Based on position information passed, Halifax determined the Cessna was entering the Area of Responsibility (AOR) for the Royal Air Force RCC located in Falmouth, England. RCC Halifax established contact with Falmouth and passed case information.

RCC Falmouth dispatched a Nimrod aircraft to escort the Cessna to Cork, Ireland. Meanwhile, a Dutch P-3 on patrol in the area was diverted to assist. RCC Falmouth requested that COMMSTA Boston advise Delta 116 to attempt communications directly with the British Nimrod. Initially, Delta 116 had difficulties communicating with the Nimrod. COMMSTA Boston continued to relay information until communications were established. RCC Shannon, Ireland also became involved in the case by having a helo and rescue boat placed on standby. COMMSTA Boston was released from the case after handing off all information to Falmouth and ensuring communications were clearly established. The Cessna landed in Cork several hours later.

There are several interesting side-notes on this case. The Delta 116 pilot was an ex-Coast Guard aviator who remembered the 5696 KHz air/ground frequency. Also, COMMSTA Boston to Delta 116 communications were monitored by Mr. Robert MacKinnon, a ham operator (N4IFS), from North Carolina. Mr. MacKinnon called the COMMSTA watch upon conclusion of the case to pass his praise for the professional manner in which RM3 Miller and the watch had handled the comms with Delta 116. A week later, the COMMSTA received a letter from Mr. MacKinnon further documenting his approval. This statement from the letter sums up Mr. MacKinnon's comments: "It has always been my considered opinion that the U.S. taxpayers get more for their dollar from the Coast Guard than any other branch of the services". Coming from an ex-Navy RM1, these comments tell a lot about Mr. MacKinnon's regard for the professionalism demonstrated by watch section "A", the crew of COMMSTA Boston, and the Coast Guard. And so the story goes, "Semper Paratus" and "No Call Unanswered." *o/s*



Dotted line indicates intended track of N677X, Solid line indicates actual route flown. Plane indicates initial distress position given by N677X.

No Sign of the Missing Vessel

BY: PA1 John Moss CGD14

Almost without a trace, an 875 ft. ore carrier disappeared on October 22, 1992 west of Guam in the open Pacific Ocean during Typhoon Colleen. No one knows what happened to the 28 crew members of the Korean freighter, DAEYANG HONEY.

The DAEYANG HONEY, homeported in Incheon, Korea, left Yampi, Australia, October 14 heading for Mizusima, Japan. Vessel owners, Pan Ocean Shipping of Seoul, Korea, last communicated with the master on October 21. The master of the DAEYANG HONEY indicated he had altered course to avoid Typhoon Colleen.

The first and only indication that the DAEYANG HONEY was in trouble came from an Emergency Position Indicating Radio Beacon (EPIRB) that was received via satellite in Honolulu and relayed to the Coast Guard Marianas Section Rescue Coordination Center (RCC) in Guam. It was the last time anyone heard from the ship.

According to LT Eric Brown, once the signal's location was verified, the Coast Guard Marianas Section Operations Officer issued an Urgent Marine Information Broadcast requesting assistance from vessels in the area. The M/V HAI GAS responded, but was unable to get to the area because of rough seas from Typhoon Colleen.

On October 23, a Navy P-3 aircraft from Naval Air Station Agana VQ1 Squadron was the first to search the area. To reach the search the area, the P-3 had to fly into the teeth of Typhoon Colleen.

"We experienced winds of 110 knots," said CDR Patrick J. Hovatter, Commanding Officer VQ1 Squadron. "Every time we went below 3500 ft., we got the heck beat out of us."

He said they maneuvered their aircraft between two feeder bands of the typhoon and followed the spiral toward the center of the storm. "If you've ever seen the movie "The Final Countdown," when the ship is passing through time, it was like that." said Hovatter.

The Navy air crews continued to battle the weather, but were unable to make any positive sightings.

For the next four days, searchers found light debris, but no confirmed sign of the DAEYANG HONEY. During the search for the DAEYANG HONEY, two crewmen from the merchant vessel OCEAN TRADER fell overboard trying to retrieve a piece of debris. One man was rescued, the other wasn't found. On October 26, a Navy P-3 spotted an empty life raft floating about 850 miles west of Guam. The M/V BUM JU diverted its course to retrieve the raft and confirmed it was from the missing freighter. The BUM JU found a board two days later with the word "Daeyang" printed on it. Neither the vessel nor any survivors were found under excellent search conditions in the following days. The active search was suspended October 31.

In all, 12 aircraft from the Navy, Air Force, Coast Guard, and Japanese Maritime Safety Agency, a private plane and four merchant vessels searched more than a quarter of a million square miles of ocean.

Representatives from Pan Ocean Shipping and the crew members' families traveled to Guam from Korea to consult with Coast Guard SAR controllers. The controllers gave them daily briefings on search developments.

"It was a pretty intense effort over a seven day period," said Brown. "I feel proud of the job the operations center controllers did. It's just frustrating that we didn't find the missing crewmen."

CAPT Juan T. Salas, Coast Guard Marianas Section Commander, said he can sympathize with mariners who find themselves in desperate situations. "Many times I've said a prayer out on the open ocean, especially when I've had seven feet of green water washing over my bow," Salas said. "My heart goes out to the families of these missing men." *o/s*

QMC Reed Kohberger, Marianas Section Assistant Operations Officer, describes the latest search efforts for the merchant vessel DAEYANG HONEY to representatives of Pan Ocean Shipping and the crew members' families.

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Emergency Medical Technician Continuing Medical Education

By: ASM2 Richard M. McLaughlin, CG TRACEN Petaluma

Continuing Medical Education (CME) lesson plans will soon be available to all Coast Guard Emergency Medical Technicians. These lesson plans include complete instruction on classroom, lab setup, and treatment currently being taught at Coast Guard EMT School. The lesson plans will provide an excellent way to review or sharpen your EMT Skills prior to attending a EMT recertification class. Their primary purpose is for conducting the monthly recurrent training requirements outlined in COMDTINST M3710.4. If they are completed monthly, at the end of the two years, you'll have your 48 hours of CME's for recertification with the National Registry.

If you would like more information concerning these lesson plans, contact the EMT School at (707) 765-7045. Provided below are the requirements the NREMT utilizes for recertification. (Registration requirements on the next page.) *ols*

REREGISTRATION REQUIREMENTS

Activity	Standard	Verification
National Standard Basic EMT Refresher Course	State Approved National Standard Basic EMT Refresher course with a successful completion of local written and practical examination	Copy of card or certificate showing successful completion
Current C.P.R. Certification	Current CPR certification by the American Heart Assn., the American National Red Cross, or The state EMS. (All CPR training must meet AHA Standards)	Copy of card or certificate showing successful completion
48 hours of Continuing Education	In addition to the topics listed below, any subject covered in the National Standard EMT Course will be accepted for credit. These topics may be presented by critiques, didactic sessions, practical drills, or workshops. (24 hours/topics) Topic — Max Credit Hours Operational specific drills — 24 hours Boat Crewman Qualification Coxswain Qualification Boatcrew Drills Basket hoist Rescue swimmer ops Man overboard drills Video and other EMT Media — 10 hours EMS related training conf. — 48 hours Run review and case present. — 24 hours CPR Instructor course / Instructing CPR — 12 hours	Certificates where applicable, In remaining cases, statement outlining dates, times, and topical content on official letterhead signed by supervisor training officer, etc. Information on credit available for EMT instructors may be obtained by calling the Coast Guard EMT School
Successful completion of any of the following National Standard courses may be applied to the 48 hours of CE.	Topic — Max Credit Hours PHTLS — 16 hours BTLS — 16 hours Auto Extrictions — 16 hours Emergency Driving — 12 hours Dispatcher Training — 12 hours ATLS — 16 hours ACLS — 16 hours	Copy of card or certificate issued by recognized agency

A Lesson Learned, The Hard Way...

By: CDR D. B. Perkins, G-NRS-1

An Administrative Investigation crossed my desk the other day. Not too unusual -- that's what happens to senior staff at Headquarters. This one, however, showed that some aspects of our Maritime SAR Assistance Policy (MSAP) continue to be misinterpreted. Being that the MSAP fairly complex, misinterpreting it is not surprising. However, professional Coast Guard watchstanders are expected to know, understand, and most importantly, consistently apply the MSAP in daily dealings with the public. This case gives us an opportunity to learn about the MSAP from the mistakes of others. As you'll see as you read on, there are one or two obvious seamanship lessons to be learned from it as well. But, before I tell you about the case, let me give you some background on where we are today, and background explaining some of the MSAP's complexities.

As our maritime SAR assistance policy evolved over the last decade, one of the most difficult issues we faced was how to resolve the conflicting desires of the commercial assistance industry and volunteer assistance groups, such as the Coast Guard Auxiliary. Striking a fair and equitable balance between them is not easy, inasmuch as both would like maximum opportunities to render maritime assistance. The policy reads as it does today as a result of a long series of discussions between the Coast Guard, commercial assistance providers, others involved in maritime assistance, the Coast Guard Auxiliary, and the Congress. From the perspective of any one of these entities, the policy appears less than perfect. However, since the last major changes in 1988, all have expressed reasonable satisfaction with its provisions. I believe that this is because the present policy strikes a good balance between the sometimes competing interests of these various parties. No further changes are anticipated in the foreseeable future.

Now, on to the case at hand. One beautiful fall afternoon, a call came into the local Coast Guard station from a 15 foot power boat that was out of gas. The boat was reported to be about 30 feet from being blown against the rocks that formed one side of the harbor basin. The wind was blowing at 5 knots, producing a light chop; depth of water in that area was over 20 feet. There were 3 POB and 2 PFDs on the boat. The owner said he was out in his boat for the first time; he seemed unfamiliar with the operation of any kind of vessel.

STOP HERE! Without looking at the MSAP, answer this question, pretending for the moment that you're the duty coxswain / OOD at the station who got the call?

What would you do?

(A) Issue a MARB (Marine Assistance Radio Broadcast)
(B) Call a commercial assistance provider
(C) Send out the 41' UTB
(D) Dispatch a CG Auxiliary boat to assist
(E) All of the above

If you answered (A) or (B), you probably need to review paragraph 3.A.3.d. of the MSAP, which is found in Chapter 3 of the CG Addendum to the National SAR Manual (COMDTINST M16120.5A). To boil that section of the policy down to its essential ingredient: IF THERE IS DOUBT ABOUT THE CONTINUED SAFETY OF A BOAT AND/OR ITS OCCUPANTS, WE SHOULD RESPOND IMMEDIATELY WITH APPROPRIATE COAST GUARD RESOURCES. Therefore the "correct" answers are (C) or (D). If you answered (E), you are probably overreacting.

In actual fact, the station duty coxswain/OOD sent an Auxiliary boat to assist. The Auxiliary boat quickly arrived on scene, put a line on the STERN of the disabled boat (it was bow in towards the rocks), and towed it safely away. So far, so good... The Auxiliarist then called the station for further instructions.

Pretend, once again, that you are the duty coxswain / OOD and you don't have a more urgent mission for the Auxiliary boat. Options available to you include:

(A) Issue a MARB
(B) Call a commercial salvor who you know works in that area
(C) Tell the Auxiliarist to tow the boat to the

nearest safe anchorage to await commercial assistance.
(D) Have the boat towed back to its moorings
(E) Sell the boater some gasoline

If you answered (A), (B), or (C), you need to review paragraphs 3.A.4.c. and 3.A.5.f. of the MSAP. Once the Coast Guard has undertaken a case, there is no requirement that it be turned over to commercial assistance. We should only do so if that is what the boater desires OR we have a higher priority need for the CG resource AND the relief can be done safely. If you answered (D), you may well be correct, but only if the boater's moorings happen to be the nearest safe haven. See MSAP paragraphs 3.A.1.d. and 3.A.5.e. Answer (E) is also correct, especially as that is what the boater actually requested in this case and the Auxiliary boat had gasoline on board that was available for this purpose. The Coast Guard Supply Policy and Procedures Manual (COMDTINST M4400.19), paragraph 4.Z.1.a., delegates authority for such action to the officer-in-charge of the station.

Unfortunately, the real-life station OOD chose option (C). And there begins a tale of woe. Because the Auxiliarist was not confident that the occupants of the disabled boat could safely handle the tow line, a stern tow was maintained. The wake from a passing pleasure craft came in over the stern, sinking the disabled boat. Total loss... The three POB, now PIW, were recovered by the Auxiliarist with one minor injury. CASE CLOSED.

Extra Credit Question: Where does it say that Coast Guard boats can take a certain percentage of non-emergency cases in order to provide training for our boat crews?

Answer: NOWHERE! That was part of an OLD policy that was specifically DELETED when the MSAP was substantially revised in 1988. If your boat crews need towing training, use another Coast Guard boat or get the Auxiliary to help out.

Lessons to be learned:

Read the policy! Coast Guard watchstanders make day-to-day operational decisions that require THOROUGH knowledge of the MSAP. You can't make the right decisions if you don't know what the policy says.

Keep the pointy end in front. *o/s*

1993 Boat Managers Quality Workshop

By: ENS P. J. ST. JOHN, G-NRS-2

The third annual Coast Guard Boat Managers Quality Workshop was held in Annapolis from the 1st through the 5th of March. The district Boat Managers along with representatives from LANT, PAC, MLCPAC, MLCLANT, and G-NRS staff were on hand to discuss topics ranging from the DOT-IG Audit to reviewing the revised Boat Management Manual.

The following is a summary of some of the more important topics discussed throughout the Quality Workshop.

41' UTB Replacement

The 41' UTB was placed into the field in 1973, originally intended to have a 20 year service life. In 1990 it was estimated that the existing 41' UTB's have a 1-10 year service life remaining.

The acquisition process for a standard boat is long and tedious with a replacement slated to reach the field no sooner than FY 2000. A very tentative schedule follows:

The initial step was to submit a Resource Change Proposal (RCP) to Congress for FY 94, providing a billet to begin work on the mission analysis in FY 95. The acquisition strategy will be a zero-based approach, based on the projected needs and desires of the Coast Guard 7 years in the future.

In FY 96 an evaluation of an off the shelf boat as opposed to an original Coast Guard design could take place. In FY 98 the test and evaluation stage, followed by production in FY 99. Resulting in a boat delivered to the field in FY 00. (If all goes well!)

G-T Information Brief

The 750 AN/SPS - 69 radars have begun to make their way into the fleet. After first installation, an interference problem with VHF-FM reception was noted. With the radar in use , the VHF is almost ineffective for receiving weak signals. A deadline of six months has been set to find an engineering solution.

The AN/SPS - 69 radar procurement has been in the works for two years. Still, delivery to the field is unable to be completed until problems have been corrected. This correction is currently holding up the BOATALT for the electronics package on the 44' MLB. Since warranties on the radars begin when they are installed for use, the radars held in stock will be fully warranted when placed on the boats.

Risk Assessment/Fire Fighting

In an effort to stir up the workshop, LCDR Lewandowski from G-NRS brought up Risk Assessment. No where is there written guidance on the concept , or the steps necessary for a small boat coxswain to follow when assessing risk.

Should there be formal training and written guidance for the Coxswain?

It was the consensus of the Boat Managers that most problems associated with inadequate risk assessment are derived from deficiencies in the qualification process. Coxswains receive their qualification too early, often the individuals qualifying the Coxswains have not been fully qualified themselves. The individual signing off the qualification probably hasn't been underway to witness the seamanship capabilities of the future coxswain. The results have been inexperienced Coxswains, unable to perform a complete and accurate risk assessment after arriving on scene, leading to unnecessary mishaps.

The next question put forth, is whether firefighting is a Coast Guard responsibility? The Marine Safety Manual provides the only guidance on fighting fires. It was agreed that firefighting is the responsibility of the Coast Guard when necessary to save lives. The ambiguity comes when a crew has been safely

evacuated from a burning boat. Does the Coxswain and crew sit back and watch the distressed mariner's $150,000 vessel burn to the waterline, or do you risk the boat crew's safety and fight the fire. The answer lies in the risk assessment by the Coxswain. Can the crew fight the fire safely? (Editor's Note: See article on page 3.)

Boat Managers Job Description TQM style

Jon Epstein, (borrowed from G-NSR) facilitated the discussion on what the Boat Managers spend their time doing. Their time was divided among six categories; visiting units, working with field units, meeting requirements from HQ/MLC, unit administration, collateral duties, and other significant duties. Collateral duties take up the largest percentage of the Boat Manager's time.

Using TQM, the customers and services provided were listed providing the newcomers to the group a better feel of what is expected of them and where their efforts should be concentrated.

Through the discussion, it was found that procurement and disposal of property is the biggest obstacle in a Boat Managers job.

STAN Teams

The role of the STAN teams was the topic of much discussion throughout the conference. A letter from Group Sault St. Marie suggested that STAN Teams should play more of a training role for the units.

It is the goal of the teams to provide guidance, not training. The units receive a detailed materiel assessment and the station crews are evaluated through a series of underway drills. Units which maintain their Ready for Ops training have had much more success with STAN Team visits than those neglecting this training. Since the necessary guidance is in place STAN Teams will continue to provide guidance in holding boats to a standard level of materiel condition and operational capability.

However, effectiveness of the STAN Team is lost when no one is held accountable for discrepancies found during the visits, and repairs are not completed. In order to alleviate this problem, it was suggested that Groups and Districts be more directly involved in the STAN visits. Upper management should be provided a more detailed report on the discrepancies found. Further accountability would be insured if the Group made a follow up visit to determine whether maintenance is completed. Additionally, each level in the chain of command must ensure necessary funding and expertise are provided to properly maintain the boats. Discrepancies which limit the full operation of a boat can't be "deferred" until the next "yard period" (a program that many commands follow).

41' UTB STAN Team Report Card

LCDR Sorensen and CWO Price visited from the UTB System Center to keep the workshop in line on the subject of the UTB STAN Team. The first issue discussed was the BOATALTS which have been completed since the previous workshop:

Fuel filter system
Removal of cabin vents
Adjustable engine mounts
Enlarged forward cabin access hatch

Problems encountered:

Excess gear stowed on-board
BOATALT 45 done incorrectly
Painting of bilges has been done to excess
Fire pump bases (cracked)
PTO angle brackets (cracked)
Lack of Compass calibration
Main Engine hatches, warped
Bushings (worn)
Deck Scuttles (bent)
Battery box covers
Turbo lube oil supply lines
Radar and Loran familiarization
Coxswain's conversion of tenths to seconds

The UTB STAN Team schedule will be reaching the end of its cycle. The second round will begin and the order of the visits will change, allowing some stations to see them for a second time sooner than they may have expected.

44' MLB STAN Team Report Card

CWO Ham from the National Motor Lifeboat School (NMLBS) made the long trip from Washington to update the Boat Managers on what the MLB STAN Team has found in the last year.

Out of the 32 stations visited and 37 MLB's evaluated, only 11 Boats were ready for heavy weather operations.

Problems encountered:

Boats unable to maintain required RPM
Overheating
Lack of engineering knowledge
Materiel watertight condition (doors not properly adjusted)
An average of 11 BOATALTS per vessel done incorrectly

Concerns:

Because many MLB's are not getting underway hours, maintenance is being neglected. Senior people are not getting underway and seeing the problems. Lack of training for the engineers keeps them from maintaining the boats properly

In an effort to solve some of the problems the NMLBS is printing a newsletter and recording a video in order to better clarify what a "standard" boat is comprised of.

Chief, Search and Rescue Division

Captain Cowan addressed the Boat Managers on the goals which he has for NRS and the small boat community. In an effort to reduce the proliferation of non-standard boats in the Coast Guard, reductions in the non-standard fleet is taking place. The efforts are comprised of "commonization" within districts and the surveying of "excess" boats.

Seeing the small boat community's "on the water service" as the foundation of the Coast Guard, it is a goal of Captain Cowan to reestablish the Coast Guard as THE world's leading authority on small boat operations.

Finally the Captain would like to see an effort to initiate more award recommendations for small boat crews, so they can receive the recognition they deserve.

G-ELM (Property)

Armed with a bat and TQM flow charts, Lynn Brown from G-ELM discussed property as it applies to small boats. The major property concern involved the disposal of standard and non-standard boats. Ms. Brown, with her bat and knowledge, warded off any unprovoked attacks by disgruntled Boat Managers.

Systematically outlining the disposal process for standard and non-standard boats, with her "quality" flow charts. Ms. Brown answered questions such as: Who can initiate a survey? Who needs to be involved in a survey and disposal? Who can receive excess boats which are not disposed of through the Defense Reutilization Marketing Organization (DRMO)?

The guidance provided was an attempt to assist the Boat Managers in disposing of boats in a more timely and efficient manner.

OMC/640 Hurricane Zodiac

The configuration of the 640 Hurricane Zodiac and twin 90 HP OMC's has resulted in 52 powerhead failures and cracking in the transom, with very few hours on the boats.

After having gone to OMC and Hurricane with the problem, the two companies came up with a possible solution.

Raise the transom 5" and convert the 20" shaft to a 25" long shaft.

The work would be performed by OMC and Hurricane. Warranties on the engines and boat would begin again for its original two year period.

The Boat Managers decided to use the solution presented by OMC/Hurricane on four test boats tracked through 200 hrs. of use, with a deadline on results of 15 May. If the problems continue, further avenues will be explored.

47' MLB Update

LCDR Monteith addressed the conference on the MLB replacement project. The original specifications called for a Motor Lifeboat, resistant to capsize, self righting, heavy weather tested, providing minimum crew fatigue. In the 14 yrs. under development, the concept of what the Coast Guard set out to build hasn't changed.

The first five "pre-production" boats will be in place in less than 120 days. Throughout the first year the units will keep a detailed maintenance record, installed on a standard workstation, providing a detailed report to track problems. The command will also create a brief report to the sponsor outlining operations. A sensor package will be installed on these boats which will provide a detailed account of the actual motions of the boat if a "significant event" should take place. This will avoid

reliance on interpretations of what took place. All these checks and balances will be to insure problems will be eliminated in future production.

Integration of the boat is a great concern. How it will effect the number of boats needed for SAR response, given its increase operating range is undetermined at this point. There is some concern the 47' MLB will be used as a mini-patrol boat rather than its intended use as an MLB.

FMIS

Driven by the need to have a current listing of all the small boats in the Coast Guard, Facilities Management Information System (FMIS) is being established. It is the role of the Boat Managers to input the boats in their respective district onto the database. What it does for the individual Boat Manager is undetermined at this point, but for HQ it provides a readily accessible database to query when congress asks those incredibly important (?) questions.

Summary

The most prominent issue in the small boat community is the reduction of the nonstandard boat fleet. The largest impact will be felt outside the stations, with the M-Boats, SKI's, and reserve being reviewed on a unit by unit basis. *o/s*

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SARMIS Closeout

By: ENS Eric Runnels, G-NRS-1

Hello SARMIS Fans,

We have completed the SARMIS FY92 database with a final completion percentage of 99%! This is the earliest and most complete closeout ever. We extend our sincere THANKS and a hearty congratulations to all those involved, from the individual units, to the districts. By the time this article hits the street, we should be well on our way with FY93 data capture.

As a new goal for FY93, we are now shooting for a SARMIS database closeout date of 31 November 93. Many of you are probably wondering just how are we going to achieve the new closeout goal when we have yet to make closeout by 31 December. Well team, the answer lies in steady entry of SARMIS data year round. During my brief time as the SARMIS coordinator, I've seen that some districts have no problem with meeting 100% SARMIS data loading by 31 November (based on month-to-month projections on where they should be). These districts practice routine entry of SARMIS data and are able to maintain a balanced workload and minimum backlog. However, for reasons of workload, staff limits or unusual staff demands and circumstances, other districts delay SARMIS data loading until the last possible moment and then the pressure turns on as they attempt to batch load a SARMIS backlog spanning several months. As an objective, we suggest daily or weekly attention to SARMIS data. This will go a long way toward helping us (i.e., you) to achieve our goal. It also help to get the Annual Statistics Pub out in a timely manner for our customers (that's all of you!).

Barring any unforeseen major hardware/software problems in the final months - the new closeout goal is realistic and achievable.

Once again, a heartfelt thanks and congratulations to all involved in the FY92 SARMIS database closeout effort and smooth sailing in the months ahead! *o/s*

44' MLB STAN Team Report Card

By: BMCM G. A. LAFORGE NMLBS

During the period from December 91 through December 92, the MLB Standardization Team visited 32 MLB Stations to assess the unit practices and procedures against published standards. A total of thirty seven 44' Motor Lifeboats were evaluated for materiel condition and operational readiness. All boats were in "Bravo Status" at the time of evaluation. Every district with MLBs is represented by at least 3 boats, except Eighth District, which was not visited.

Of the 37 MLBs evaluated, only 11 passed the current requirements to be found "Ready for Heavy Weather". The other boats were found "Not Ready" in one or more of the following general categories:

(a) Full Power Trial; Exceeded engine temperature parameters, 1 or both engines: 11 Boats. (29%)

(b) Full Power Trial; Failure to achieve full RPM parameters, 1 or both engines: 12 Boats. (33%)

(c) Structural and/or Watertight Integrity problems severe enough to seriously degrade ready for heavy weather status: 5 Boats. (13%)

(d) Mechanical conditions, not directly related to full power trial parameters, severe enough to seriously degrade ready for heavy weather status, example, installed pumps: 8 Boats. (21%)

(e) Crew Safety related conditions, not readily correctable, severe enough to seriously degrade ready for heavy weather status: 3 Boats. (8%)

(f) Six boats failed the evaluation in 2 or more of the categories listed above. (16%)

(g) Three boats had severe enough problems for us to recommend strict operating limitations well below heavy weather, until the problems were corrected (8%)

We concede that even the finest boats sometimes suffer from bad luck when running a full power trial. However, we estimate that well over 70% of the other conditions listed above were known by the unit or group prior to our arrival at the unit. Even most of the full power trial problems are usually known long before our arrival. Close to the same percentage of the conditions found on the boats are known already at the Group level or above. The paperwork on the condition is pending, completed or overlooked. The reasons the conditions are not yet corrected vary. The most common "reasons" include:

(a) Scheduling availability or charlie periods. This really is a poor excuse if the boat is not ready for full service.

(b) Failure to ask for, or lack of technical help or facilities necessary to correct the problem.

(c) Failure to ask for, or insufficient funding. Management of existing funding is another issue.

(d) Complacency. A willingness to live with the situation, at least in the short term, until a more convenient time is available to correct it. A discrepancy soon becomes the status quo. "The boat's rarely needed." "We've got a WPB available if we need it." Or "It hardly ever gets rough around here." We hear things like this a lot. Sometimes from uncomfortably high up the chain of command.

(e) Failure to recognize how small discrepancies tend to combine into an untenable situation. Instead, "crisis management" tends to get the attention.

(f) Insufficient skilled workers or failure to utilize skills available. It is not uncommon to find commands that feel they will not be supported or even penalized through performance evaluations if they work personnel too many hours or too hard. Perhaps clarification of the "maximum liberty" issue is needed. Some units appear to be getting into a "work/training deficit" that will be difficult to overcome. "Maximum liberty" should be a goal but not at the expense of acceptable mission performance.

(g) Tasking of personnel toward other duties.

(h) Lack of "ownership" of the problem. Fingers

are pointed up and down the chain of command.

(i) With perhaps 30 percent of the serious discrepancies found, junior unit personnel are not properly trained to detect and take steps to correct the problem. They are not aware a problem exists. Senior unit personnel (EPOs) know of or are capable of detecting all but perhaps 10 percent of the discrepancies found. A lack of training or supervision in such areas as PMS, engine tune up, conducting a full power trial, good engineering practices and deck maintenance would fall into this category.

The specific reasons so many boats are not ready for heavy weather are of little importance by themselves. What is important, is that if these 37 boats are a fair representation of the fleet, roughly 70 percent of our ready lifeboats *may not be ready* to conduct missions anywhere near their operating limitations. In many instances, no other suitable resource, including aircraft, will be available to respond in a timely manner.

Too many of these boats are being allowed to become an operational liability instead of an asset. Historically, the 44 ft MLB has been exceptionably survivable, but how many missions have been less than completely successful because the boat failed to perform as expected? The situation may be even more grim than it first appears. How many serious discrepancies get taken care of because the STAN Team is coming to visit? Judging by the increase of phone calls from groups and units before a visit, quite a few.

Over this last year of MLB inspections, the average number of BOATALTS found incomplete or done incorrectly was 11 per boat. The lowest number found was 5. The the highest number was 22. The high and the low boat are located in the same district. No significant numerical difference was detected between Atlantic and Pacific Area boats concerning BOATALTS.

The Team's impression of over all structural conditions of MLBs remains unchanged. The 9th District boats tend to be very sound structurally. The good condition is a product of the fresh water environment and limited usage. They are generally not exceptionally well maintained, but paint systems are usually maintained adequately, in accordance with the lower demands of the fresh water environment. We recommend that if relocation of a 9th District MLB is contemplated, 100% renewal of coating systems should be accomplished before the boat is placed back in salt-water service. In salt-water, the existing paint systems will invariably fail almost immediately.

Boats with seriously degraded structural conditions can be found in every district. Quite a few 5th District and 1st District boats tend to have serious structural problems that affect strength and watertight integrity. 13th District boats tend to have fewer structural problems from neglect. Problems noted are often related to structural damage caused by surf training operations or other operational mishaps. The operating environment takes it's toll, but because of that, the 13th District boats tend to be well supported, funded and cared for. 11th District boats tend to be supported fairly well at the MLC level. Structural and material condition varies substantially from unit to unit.

For evaluation of unit MLB operational proficiency skills, the "Ready for Operations" check off lists have long been used as the basic evaluation tool. We do not make a judgment as to if the coxswains and crews are "ready for heavy weather". Evaluations are conducted for night piloting evolutions, man overboard and a disabled craft rescue and assistance. Unfortunately, these "RFO" check off's are definitely not MLB type peculiar. The listed procedures are deliberately intended to be generic. A coxswain and crew could theoretically perform every task listed on the check off, get a very high score and still not have a clue about MLB heavy weather boat handling, line handling or other MLB crew procedures, as taught by the MLB School. The check off only serves as a general guideline of generic details. Most of the boat crews we evaluate are capable of conducting the majority of the items listed in a check off, therefore most of the evaluations are called "satisfactory," but what is seen by the evaluator often reflects procedures contrary to MLB School teachings. Standardization team evaluators try to compensate by informing crews that we are there to observe their best heavy weather techniques but we are often dissatisfied by the level of heavy weather proficiency displayed. Of course, some coxswains and crews do very poorly by almost anyone's standard. The suspected causes for the lack of proficiency in MLB heavy weather procedures follow.

(a) A major part of the problem is that detailed standardized procedures for heavy weather MLB operations are not readily available to the field. What is available has limited or no "official status" as the accepted standard. MLB School taught

procedures are based on years of accumulated experience and training. They are written down in lesson plan format and require considerable explanation and demonstration by a competent instructor to be fully appreciated. Such a lesson plan makes for a poor field reference. Without a more universally accepted reference, STAN Team Evaluators are inclined to accept standards of performance that they would never accept from MLB crews they were personally responsible for. Consideration should be given to developing a "Motor Lifeboat Heavy Weather Seamanship Manual", that shares insight on everything from in surf personnel recovery to heavy weather night piloting. If such a reference was in standard use, crews could prepare for a STAN Team visit and know exactly what we are looking for. Such a manual would soon become the standard for MLB training.

(b) Lack of motivation to improve operational procedures and techniques. To some degree, every level of the chain of command has to be included. Headquarters, Districts, Groups, Stations, Coxswains and Boat crews. Too many are satisfied with the status quo. They are too preoccupied with other missions and programs. This is particularly true in areas where the MLB is used only rarely in rough conditions or with larger tows. Common UTB and other fair weather practices are dangerous when applied to a 44 ft MLB in rough conditions. If the Coast Guard is serious about considering MLB experience and training as standardized, a motivator must be found. We doubt that even a serious mishap will provide the motivation for improved professionalism. In the past, the service has tended to react to mishaps with more operating limitations, not improved performance standards.

(c) Insufficient participation by field units of the MLB School training system. Aside from coping with the management problems of larger classes, we recognize that greater availability to training would be very beneficial. It will do little good however, unless the other causes addressed above are corrected. We have seen many recent MLB School graduates on our STAN Team visits. Without solid detailed reference material, they are not very effective at influencing MLB crew training. If they do have a positive influence on training, they still tend to miss subtle but important procedural details that render the training less than completely effective. This is true of both recent graduates of the coxswain courses and the supervisors. Detailed references would greatly enhance the value of school training. Unfortunately, returning MLB School students often find it easier to go back to "business as usual" procedures instead of getting their commands and crews to adopt new training. Most of the school's training needs to be incorporated throughout the crew. Good training is intensive, time consuming and of a recurrent nature. Units that rarely use the MLB in heavy weather and have other mission responsibilities are going to have a strong tendency to place a low priority to incorporating detailed MLB training.

As a result, much of the time and money invested in sending MLB personnel to school is wasted. The student's parent command, group and district need to be true believers in the value of MLB training and desire to exploit it, or advanced training is wasted. Without recurrent training and written training material, the value of MLB School training degrades significantly with the passing of very little time.

Lack of MLB operational experience, "depth", at the unit, group and district levels. When a Station CO, XPO or EPO has no "credible" MLB experience, they may to tend to place a low value on improving performance in this area. To some degree, group and district operational managers can fall into this same category, but the need for credible experience is not as important as sensitivity toward the need to improve and support standardized practices. In fact, based on our observations, experienced, and highly motivated MLB coxswains and engineers often give up trying to influence MLB operational professionalism because it doesn't fit into the chain of command's agenda. Because of this, sending experienced highly motivated lifeboat men to some locales is often an unfortunate waste of talent. It is often ineffective at achieving the goal of standardized boat crew proficiency.

In conclusion, both in materiel condition and operational performance, the 44 ft MLB standardization Team has made a difference. There are still major problems to overcome if the desired outcome, a uniform standard of professionalism and material condition is the intended goal.

CO's Remarks

By: CWO W. J. HAM, JR., CO NMLBS

The points addressed by BMCM Laforge's letter are accurate, informed comments regarding the state of the MLB community. They are based on experienced observation by a team of people well

versed in what an MLB is capable of doing and the reasons for it's existence.

We seem to be gaining some ground in the operational aspects of the MLB's operation, and possibly some ground in the engineering and maintenance side of the house as well. I feel almost apologetic to many of the stations we visit, as most feel that they are being asked to do something that is based on the NMLBS curriculum and is otherwise unavailable. I have taken on the task of providing some of this information through the informal channel of a NMLBS Newsletter. Although this is a step in the right direction more needs to be done. I have also put forth two initiatives to the NMLBS staff: one to create a comprehensive heavy weather operations guide or textbook which will contain the specifics of heavy weather operations, the other to create video tapes which demonstrate the techniques taught here at the school for use in station training programs. Together these should help disseminate the information that needs to be passed on. These are but a few steps of many that we should be making towards professionalism in the small boat community. We have come along way but still have miles to go before we will be truly a professional organization in every sense of the word.

In regard to the findings of the STAN team visits, the following is what needs to be done to get everyone on line. The implementation of these initiatives will be even more critical when the new generation of lifeboats come on line.

(1) Reestablish the engineers course at the NMLBS. Not only is this needed now... it will be absolutely necessary when the new lifeboat comes on line. If the engineers cannot keep the present power plants tuned and running properly, the results of a higher horsepower, and more costly engine being neglected will amplify the problems through unneeded, and very costly repairs. Additionally the ability to maintain the watertight and structural integrity of any boat is vital to it's survival in heavy weather operations. Evidently this is not a subject that is well taught nor enforced in the small boat community.

The small boat station engineers want to do a good job but need the knowledge and resources to do it. The NMLBS can provide the knowledge.

(2) Establish a comprehensive guide to boat management functions that is standard throughout the Coast Guard. Each MLC, district and group throughout the Coast Guard has differing philosophies on boat maintenance responsibilities, management policies and funding levels (i.e. who holds the dough). Unless this is standardized and becomes institutionalized as the status quo, we will never ever be in line with each other and will never reach the level of standardization that is desired.

Put some teeth in the STAN team program by insuring that the chain of command is accountable for the training and maintenance. Nothing much will change if responsibility is ignored or deferred to a lower level. This can only be done by direction from the top of the chain (i.e. Commandant). ***o/s***

Out with the old...

In with the new.

RESCUE AND SURVIVAL SYSTEMS NOTES

By: CWO Mark O. Hyde, G-NRS-2

CAN YOU SURVIVE?

First I want to tell you this test is unfair. It is my article, my test, and my gifts so I don't care if you disagree with my answers. The answers are compiled from many different sources so there may be many conflicting right answers. Pick the best one. Do not assume Coast Guard publications have the most correct answer. The best way to win is to use good judgement, common sense, and research military and civilian survival books. The individual that I feel provides the most correct answers will win some good survival items. In order to qualify, the answers must be returned by 1 JULY 93. The winner and my "correct answers" will be published in the issue of On Scene. Return answers to: (Copies OK)

SURVIVAL TEST
Coast Guard Headquarters (G-NRS)
2100 Second Street S. W.
Washington, DC 20593-0001

1. If you suddenly found yourself overboard what color float coat would you prefer to be wearing?
a. Blue
b. Green
c. Orange
d. None, I'm a great swimmer

2. If the recoil rope breaks on the CG-P5 pump you can only start the engine if?
a. You have tools to remove the recoil housing
b. You remove the housing with your bare hands
c. You have an electric drill to turn the shaft of the engine
d. Are you nuts? The engine will never start.

3. A plus sign (+) folded on one side of a paulin or a (X) drawn in the snow means?
a. Need food and water
b. Need medical attention
c. I'm OK, leave me alone
d. Plane is flyable, need tools

4. How far is the maximum range of a survival mirror?
a. 5 miles
b. 10 miles
c. 55 miles
d. 100 miles

5. When tracking how do you tell if a deer (buck) is in rut?
a. His dung is a brighter green
b. His foot prints (toes) face forward
c. His foot prints (toes) face outward
d. His foot prints have drag marks

6. Sea snakes usually swim?
a. Under water
b. On top of the water
c. Snakes can't swim
d. They are related to the eel

7. If you are in forty-five degree water without exposure clothing you should?
a. Remain as still as possible with your knees up toward your chest and your head out of the water
b. Swim to keep your circulation up
c. Drownproof
d. Forget about life because you're going to live less than one hour anyway

8. Which of the following edible insects contains 58% protein, 12% fat, 3% ash, vitamin B complex and vitamin A?
a. Cockroaches
b. Beetles
c. Praying Mantis
d. Bumblebees

9. The best signaling device is a?
a. Signaling mirror
b. MK-13 Day/Night distress flare
c. Radar reflective balloon
d. 406 EPIRB

10. In a survival situation personnel shall generally proceed in the following order?
A. FIND FOOD B. BUILD A FIRE C. FIRST AID D. SET SIGNALS E. MAKE A SHELTER
a. A.,B.,C.,D.,E.
b. B.,E.,C.,A.,D.
c. C.,D.,E.,B.,A.
d. E.,B.,D.,C.,A.

11. Which of the following sources of plant food is always safe for consumption?
a. White and yellow berries
b. Aggregated fruits and berries
c. Water hemlock
d. Plants with a milky sap

12. Scurvy is the result of the lack of vitamin A found in fat, liver, oily fresh and salt water fish.
a. True
b. False

13. What is the easiest mammal in North America to hunt and kill?
a. Rabbit
b. Porcupine
c. Opossum
d. Wolverine

14. Which of the following birds or mammals are poisonous to eat?
a. Armadillo
b. Albatross
c. Beaver
d. No birds or mammals are poisonous to eat except the livers on polar bears or sea lions

15. Which of the following is a true statement about foods?
a. Snake flesh is generally safe to eat if cooked
b. Seafood is especially likely to spoil and should be eaten when fresh
c. Saltwater fish are generally free from harmful parasites
d. All of the above

16. Green grass contains vitamins A, B, and C. Try it.
a. True
b. False

17. Name the easiest area to survive?
a. Open ocean
b. Desert
c. Seashore
d. Inland lowlands

18. Small sharks, cornered in shallow tidal pools, make very good eating.
a. True
b. False

19. Which of the following is a false statement about water procurement?
a. Melted ice that is formed from sea water is acceptable as long as it is gray and hard
b. In the tropics water from green coconuts is the safest source of water
c. Fresh or brackish water is usually found about 3-4 feet under the soil or sand in back of the debris thrown up by high tides
d. The leaves of seaside purslana or common purslana can be chewed and swallowed to relieve thirst

20. Puffer, trigger, and parrot-fish that feed on coral are good eating and a source of iodine which is a necessary nutrient.
a. True
b. False

21. Without matches, what is the next best method to start a fire?
a. Bow and drill
b. Flint and steel
c. Native fire saw
d. Magnifying glass

22. With a watch set to local time (standard) how can you use the sun to find rough true headings in the northern hemisphere?
a. By pointing the hour hand at the sun and north is at the 12:00 position
b. By pointing the 12:00 position at the sun and north is at the hour hand position
c. By pointing the hour hand at the sun, and south is found by bisecting the angle between the hour hand and 12:00
d. By holding a matchstick upright in the center of the watch the shadow point along the hour hand south is at the 12:00 position

23. How should you use a pole about five inches in diameter and eight feet long to ford a four foot deep swift stream?
a. On the upstream side to break the current
b. On the downstream side to keep you from slipping
c. Centered at chest level to steady you like a tight rope artist
d. Use it as flotation and swim downstream using it to fend off rocks

24. All eggs are considered safe for eating.
a. True
b. False

25. To treat frostbitten hands you should only?
a. Rub them to rewarm
b. Use dry heat to rewarm them
c. Slowly rewarm them by placing them in snow
d. Thaw them rapidly in warm water

26. What is the maximum effective range of a whistle?
a. 100 feet
b. 300 feet
c. 1000 feet
d. 3000 feet

27. Sharks go crazy at the smell of human blood.
a. True
b. False

28. How do you locate the North Star?
a. The last two stars on the handle of the Big Dipper point to it
b. The two stars at the far end of the pot on the Big Dipper point to it
c. The last two stars on the handle of the Little Dipper point to it
d. Find a spotted owl nest, it will always point north

29. Which of the following statements is true regarding sea anchors
a. Deploy sea anchors only when traveling through coral
b. Deploy the sea anchor so it is at the crest of a wave when your raft reaches the crest
c. The sea anchor should not be deployed if you want the raft to be stable
d. Deploy the sea anchor so it is at the trough of a wave when your raft reaches the crest

30. TIE-BREAKER Tell me in 25 words or less what you would do to improve Coast Guard rescue or survival equipment or training.

_____
_____
_____
_____
_____

Now that you researched the answers and finished this easy test you are ready to survive if you ever find yourself in a survival situation. Just remember the 7-Ps when dealing in all situations. Prior, Proper, Preparation, Prevents, Piss-Poor, Performance.

CG-P5 PUMP MODIFICATION

All units that received the CG-P5 pump should have also received a modification kit for it. Enclosed in the kit are instructions and materials to modify the pump. These kits were produced to correct the following problems:

a. The pump prime handle is too close to the muffler and overheats when the engine is running.
b. The muffler has exhaust leaks on the muffler guard side of the engine.
c. The pump has sharp edges that require smoothing.
d. Some engines have pinging problems.
e. The locking nut for the pivot screw on the priming pump handle vibrates loose.
f. The gaskets in the Cam and Groove fittings slip out of their grooves.
g. The discharge hose slips off the Cam and Groove fitting when operating.

These improvements should make the CG-P5 pump a more reliable and valued part of our rescue inventory. If you have a CG-P5 pump and did not receive a modification kit you may contact me at (202) 267-1585.

WEAR YOUR BOAT CREW SAFETY BELT PROPERLY

Recently I have reviewed a few MLB rollovers and crewmembers have slipped out of their Boat Crew Safety Belts (BCSB). I am researching this to see if it is a design flaw in the belt. My first indications are that some crewmembers are complacent when wearing a BCSB, or uneducated on how to put it on properly.

To put a BCSB on properly you should first ensure it is the proper size. If the belt overlaps more than 10-inches, you should use a smaller belt available from Lifesaving Systems Corp. (813)645-2748. The BCSB should be fitted around the thinnest part of your waist with the body belt releasing buckle ring pointing up. The next step is to tighten free end of the webbing that is attached to the body belt adjustment link. The final step is to force the belt down to a point just above the hips on your lower back. If the belt can slip over your hips it needs to be tightened. If you follow these steps the BCSB should provide you the extra safety margin required in the surf. *o/s*

Old Lifeboat Is Resurrected

By: PA3 James Westhoff, CCGD13

The old Coast Guard boat holds many tales of the sea, but the rotting hull seemed destined for a scrap pile. It sat forgotten in front of the Maritime Museum at Westport, Washington, in its state of disrepair until the Commanding Officer of Coast Guard Station Grays Harbor, CWO Dennis Booth, took a hard look at the old rescue boat and decided that something needed to be done.

"I just hated to see it sitting there like that, boats like that have so much history" said CWO Booth

Not long after Booth told his crew about the old lifeboat, he asked for volunteers to fix it up. Two Coast Guardsmen, BM2 Rod Storle, and BM3 Dave Sebring jumped at the chance.

"I was interested in the historical perspective of the boat," BM2 Storle said. "I'm really glad Mr. Booth got the ball rolling."

BM3 Sebring felt it a shame to see it sitting there rotting away.

In addition to their normal duties at the Station, performing search and rescue in some of the most treacherous waters in the world, the two men's free time was spent working on the "36 footer."

According to Booth, each person put in over 1000 hours on this project. "We decided that if we were going to renovate the boat, we wanted to rebuild the boat as close to specs as possible." Because all of the 36-foot lifeboats were taken out of service years ago, specifications were hard to find.

"Some of the specifications we had to guess at, on others we came as close as possible," said Sebring. For instance, in order to replace the broken windshield, the two men used an old photograph to make one from scratch.

With the support of their CO, and the help of some Coast Guard Reservists, Storle and Sebring worked at repairing or replacing every piece on the boat. "What hadn't been vandalized, rotted away," said Storle. While the two men burned the midnight oil, something strange happened.

"Gear from the boat started reappearing," said Booth. "As the town watched us make headway on the project, some of the prior "vandals" must have felt guilty. One day a porthole was left on our doorstep, it fit perfectly."

Captain Rod Leland, Commander of Coast Guard Group Astoria, was on hand for the ribbon cutting ceremony. "It's a remarkably done restoration. But what is really remarkable, is that while these two were working on the 36 footer, they continued to maintain the station's ready boats as well."

Doris Mark, a volunteer of the Wesport Maritime Museum where the boat was originally kept, was pleased at the efforts of Storle and Sebring. "The boat even looks bigger," she said. "They did a wonderful job.

At the ribbon cutting ceremony, the finished product was unveiled. The two men whose many hours of labor produced the restored boat, stood quietly, modestly taking compliments from the citizens of Wesport who came to the ceremony.

The finished project is as close to an operationally ready boat as possible. According to Booth, "It's almost ready for sea." However, the boat won't be crossing the bar at Wesport any time soon. It will remain on display at Coast Guard Station Grays Harbor, where they will be happy to show their boat to any visitors. *o/s*

The newly renovated lifeboat sits on the grounds of Coast Guard Station Grays Harbor at Westport, WA
Photo by PA3 James Westhoff

The two Coast Guardsmen who did the renovating, stand beside the completed project. From Left: Petty Officer Third Class Dave Sebring, and Petty Officer Second Class Rod Storle. Photo by PA3 James Westhoff

Technically Speaking

By: Headquarters Naval Engineering

BMC Doucette has presented a very interesting discussion of outboard motors and propellers (in "On Scene" 1/92). He has highlighted the difficult problem of selecting propellers for boats which operate at more than one design condition, such as USCG small craft which are used both for high speed transit and slow speed towing. This problem is further complicated by the use of two cycle engines, which tend to have a narrow range of efficient operation. We thought that it would be useful to add to the discussion with some technical background on propellers.

"Thrust" is required to push a boat through the water. The required thrust generally increases as speed increases. In addition, required thrust for a given speed increases with an increase in boat weight or the addition of a towing load. In an ideal world, thrust multiplied by speed equals the required horsepower. There are several factors which reduce the efficiency of converting engine horsepower into thrust horsepower. The end result is that the thrust horsepower developed is considerably less than the actual horsepower developed by the engine, which is shaft torque multiplied by RPM.

Converting the horsepower developed by the engine into thrust to push the boat through the water is the job of the propeller. One analogy that is frequently used when describing propellers is that of a screw. The blades are pitched similar to a screws threads, and as the propeller rotates, the propeller advances through the water like a screw. In fact the situation is much more like rotating small wings through a fluid, but the geometrical terms of the screw analogy are good for describing the propellers properties, with the basic variables being "pitch", "diameter" and blade design.

The torque which is input into the propeller to develop thrust is governed by the equation:

$$\text{Torque} = Kq \times RPM^2 \times DIAMETER^4$$

Kq is a value that takes into account the propeller design, water density, and the "advance ratio" which is the ratio of forward speed of the prop through the water to the speed of the propeller blade tip as it goes around the shaft. Kq increases as RPM per knot of water speed increases (and advance ratio decreases) so that high Kq and high torque occur when the engine runs fast and the boat doesn't move through the water fast. Kq changes by a factor of about 3 from stop to maximum forward speed for a typical propeller.

The formula shows that torque changes with the square of RPM, so increasing RPM increases torque a lot, even if Kq stays the same (which requires the boat to speed up). This means that if a specific prop moves through the water at a given water speed and RPM, it will absorb a known torque and power and produce a known thrust. If the engine can produce more torque than the prop can absorb, it will speed up, Kq and RPM will increase, and torque absorbed will increase until a balance is achieved. If the engine can't produce enough torque it will slow down.

Another point is that torque increases as the fourth power of diameter, so that changing propeller diameter by 18% doubles torque if all other values are kept the same.

This all means that an incorrect prop will either not absorb all the power the engine has available, known as "underwheeled", or it will hold down the engine RPM and not allow it to come to its correct operating RPM, thus reducing the available power and possibly harming the engine, called "overwheeled".

Matching a propeller requires balancing torque at each operating point, using the engine characteristics and the prop characteristics. Figure 1 shows the results of a computer analysis of two different props on a Yamaha 250 outboard. The two curves at the upper RPM end are the curves at 40 knots. Here the high speed 13−1/4 diameter by 26 pitch four blade balances torque at about 4750 RPM and the low speed 15−1/4 diameter by 19 pitch three blade towing prop balances at about 5200 RPM. This is above the maximum RPM for this engine, so the engine will not actually make this speed.

The high speed prop still has some capacity for increased speed. This figure also shows the story at

11 knots. The high speed prop balances at a lower RPM.

Figure 2 shows the horsepower absorbed with speed change for the engine producing maximum torque (full throttle) at each RPM. The low speed prop absorbs the most power at about 28 knots and absorbs substantially more power at lower boat speeds because it allows the engine to wind up to a higher RPM. The high speed prop holds the RPM down at lower speeds, so less power is produced, but it crests at 35+ knots.

Figure 3 shows the story for thrust produced at maximum throttle. The larger diameter, lower pitch prop produces much more thrust at low end but "runs out of turns" at top end.

Figure 4 also shows the larger diameter prop to be more efficient through most of the range (in general efficiency increases with diameter).

These graphs would seem to say that BMC Doucette is correct in recommending larger diameter, low pitch props. Unfortunately another consideration is cavitation. When the prop blades move through the water fast enough, they produce a strong enough vacuum that the water boils at low temperature.

The vacuum on the "back" (forward side) of a prop is enough to lower the boiling point of water to the water temperature so that the water forms cavities of steam that reduce thrust. The big problem is that when these cavities reach a high pressure area of the prop, the steam condenses suddenly and produces a tiny implosion that causes damage to the prop.

A computer can also predict cavitation, usually presenting a limit when the vacuum reaches the critical level over ten percent of the prop. Figure 5 shows that the large diameter prop cavitates if towing at ten knots at full throttle. The higher speed prop never has the vacuum rise above 40% of the critical value. The use of the larger diameter prop might be OK but might cause problems.

The simple answer is that there isn't one. Propping a boat is an involved task that requires balancing conflicting needs and limits, the scientifically "best" prop is not even available. One of the most vexing problems in prop selection is that presented by towing vessels that also need high running speeds such as salvage tugs, some fishing vessels and rescue vessels. Ultimately either free running speed or towing performance must be compromised. Fortunately a number of computer programs that work very well are available. (The one used for this study runs on Lotus 1-2-3 and was written by Headquarters Boat Technical Section.) These programs allow accurate evaluation of the propeller/engine/task matchup to at least find the best compromise. ***o/s***

FIGURE 1

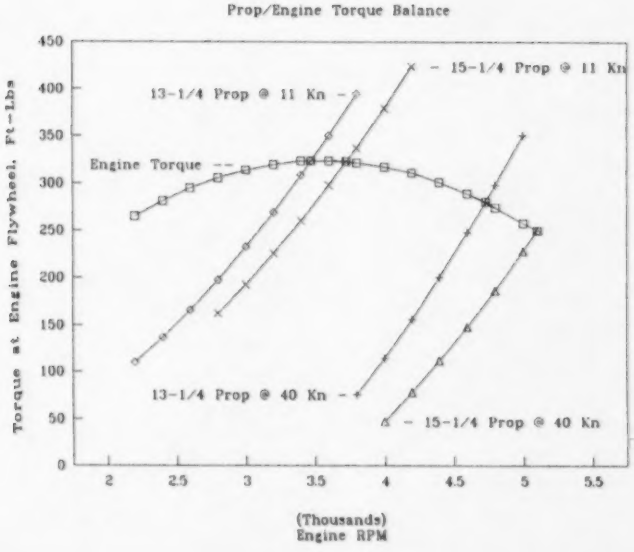


FIGURE 2

Engine Producing Maximum Torque

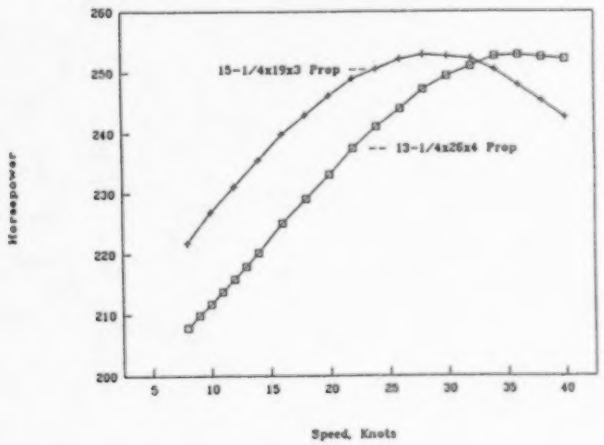


FIGURE 3

Engine Producing Maximum Torque

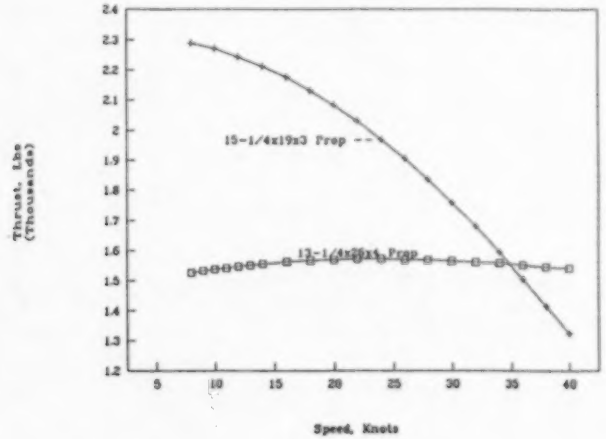


FIGURE 4

Engine Producing Maximum Torque

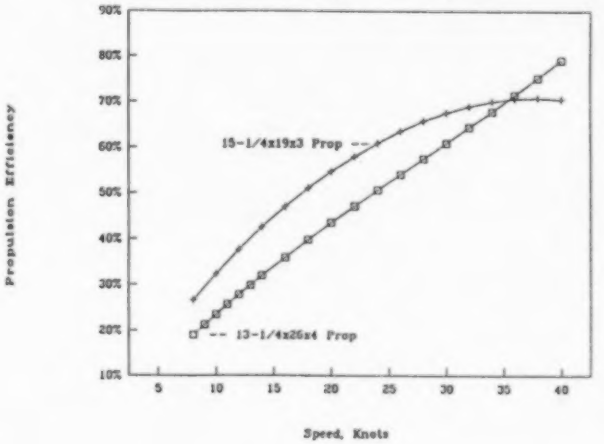
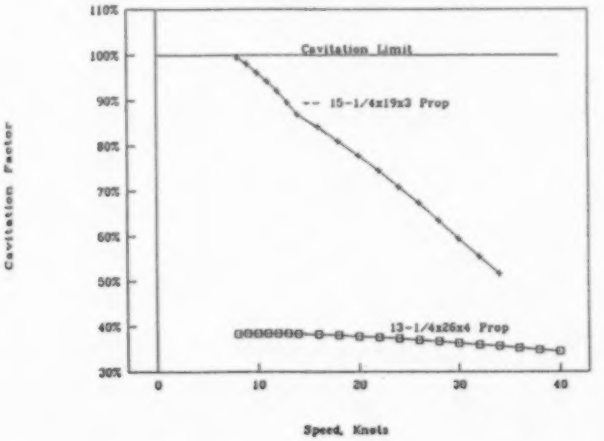


FIGURE 5

Engine Producing Maximum Torque



What's So Good About Probability of Success?

BY: LCDR K. S. PRIME, National SAR School

Probability of Success (POS) POS is a statistically generated measure of search effectiveness. It is the probability that a given search will succeed in locating the search target. It depends on two factors: (1) the probability that the target is in the area searched (POA*) and (2) the probability of detecting that target (POD**). Probability of Success is the product of the Probability of Area and the Probability of Detection: POS = POA x POD.

* *POA (Probability of Area) is described as the probability that the search object(s) are contained in a particular area. Using computer simulation (CASP) we can develop containment probabilities (POA) based upon drift and scenario assumptions.*

** *POD (Probability of Detection) is the statistical measure of search sensor detection performance. It is a function of sweep width and track spacing. It is a conditional probability; meaning we assume the search target is in the search area.*

POS calculates search effectiveness by incorporating POA (the CASP weighted replication file) with the POD. POD only measures a sensor's effectiveness; that is, it is used to estimate how well one searched an area, but it does not incorporate the likelihood that the target will actually be in the particular area searched. POS does. To better understand this distinction, consider the following examples:

(1) Searching an area which has no chance of containing the search object (POA = 0) will not be successful no matter how high the POD. Even if POD was 100% (which is not realistic) the POS is still zero (0 x 1 = 0).

(2) To give a more realistic example, if there is a 50% chance of the search object being in an area, then searching that area with a coverage factor of 1.0 (POD of 78%) produces a POS of 39% (.5 x .78 = .39). Even if POD was 100% (again unrealistic), the POS for this search rises to only 50% (.5 x 1 = .5) and no further because there is still a 50% chance that the search object was not in the search area.

In laymen's terms, POS balances options of looking very carefully in a small area for the target against looking adequately over a larger area for the same target. As an analogy, consider looking for ones' car keys. One could meticulously look for the keys in the sofa; moving pillows, pulling apart cushions, putting your hands under the sofa and in the joints of the furniture (high POD but low POA). Or, one may use the same time searching for the keys by scanning the tops of the sofa, mantel, bookcase and the rest of the family room and kitchen, concentrating on the most likely spots (lower POD but high POA). If one knows that they lost the keys in the sofa, option one would yield a higher POS. If one was unsure where the keys were last seen or lost, then option two would probably yield a higher POS.

To better understand the "Math" involved, lets compare the Manual Solution to the CASP Solution.

Manual Solution

The manual solution assumes a "circular normal" target probability density distribution about the computed datum position prior to the first search. (It looks sort of like a 3-D "bell curve" shape - see Figure 1.) The computed "total probable error of position" is taken to be the 50% containment contour. That is, it is assumed there is a 50-50 chance of the target being located inside a circle whose center is at datum and whose radius equals the total probable error of position. For the first search effort, this radius is multiplied by the first search "safety factor" (1.1) and a square is circumscribed about the resulting circle. The probability of the target being in the square (POA) is about 64% (see Figure 2).

The search area computed by applying the manual solution methodology creates a 64% POA. Again, this is based on a circular normal target distribution.

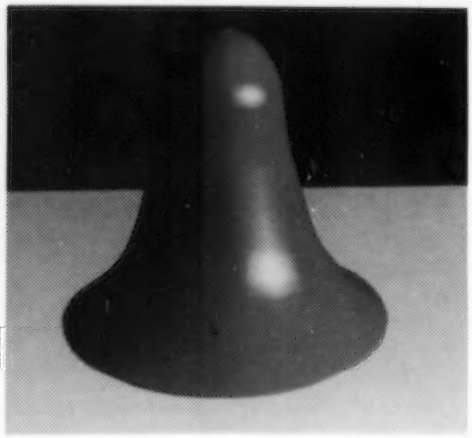


Figure (1) Manual Solution Probability Density

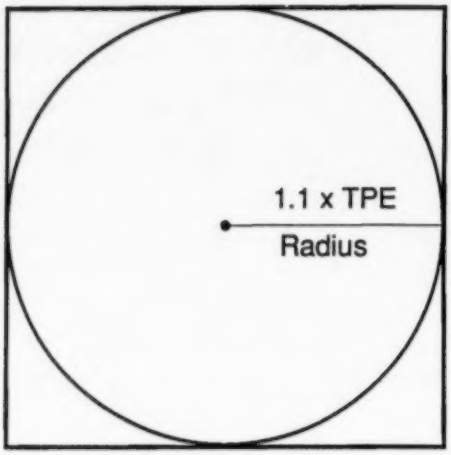


Figure (2) Manual Solution POA of 64% for Search Area based on Total Probable Error

CASP Solution

CASP generates a replication file which computes the POA based upon drift assumptions. CASP deals with probability density distributions that are not equally distributed throughout the area (weighted areas of probability; high spots and low spots ; see Figure 3). Based upon the probability distribution of replications in a CASP file, different cells will have varying probabilities of containing the drifted targets. In other words, each cell has it's own unique likelihood (probability) of containing the target. An overall POA is determined by summing the probability of each individual grided cell searched.

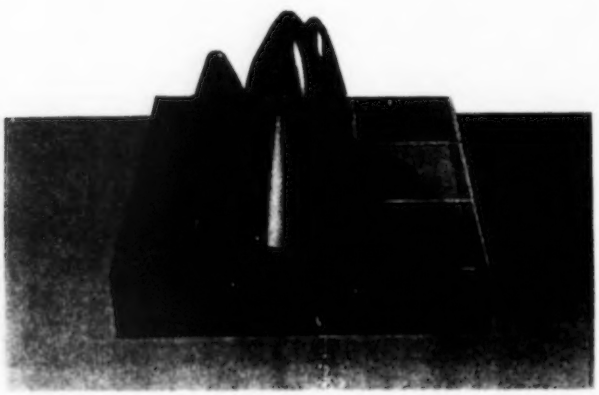


Figure (3) CASP Probability Density

POA is based upon the distribution of replications that drift into the search area according to the CASP scenario. POS accounts for varying probability. That is why it is a better measure of search effectiveness than POD. The following example demonstrates the value of Probability of Success verses Probability of Detection.

	AREA	POA	x	POD	=	POS
1	2571 SqNM	85%	x	40%	=	34%
2	1964 SqNM	63%	x	51%	=	32%
3	1080 SqNM	35%	x	78%	=	27%

(Note, 1080 SqNM is approximately a 33 X 33 NM square, a frequently encountered near shore search area.

In this example, area 1 has an 85% chance of containing the target. If it is searched with a POD of 40%, it would yield a Probability of Success of 34%. Contrast this result with area 3, which is searched with a higher POD (78%) but has a much lower probability of containment POA (35%) and yields a Probability of Success of 27%. CASP, in this case, demonstrates it is better to search a larger area with a lower POD, than to search a smaller area with a higher POD. One should be aware of the POD, however, POS is a better measure of search effectiveness.

The following examples illustrate the usefulness of CASP and how POS information from the Top Map can guide search planning decisions when developing a search area. If one uses CASP as a search planning tool, then one should be guided by the highest Probability of Success, not Probability of Detection.

Lets look at a series of abbreviated CASP maps and compare search effectiveness for equal amounts of effort* to search:

CASP OUTPUTS:

	CELLS IN ORDER OF PROBABILITY DENSITY			COVERAGE 1.0 CUMULATIVE		COVERAGE 1.5 CUMULATIVE	
				(SqNM)		(SqNM)	
NR	PROB	S.E. CORNER		EFFORT	POS	EFFORT	POS
1	17.67	41-00N	68-00W	301.1	13.7	451.7	16.5
2	10.83	41-00N	68-20W	602.2	22.1	**903.3**	**26.7**
3	9.59	41-20N	68-00W	**901.8**	**29.7**	1352.7	35.6
4	8.60	41-20N	67-40W	1201.4	36.3	**1802.1**	**43.9**
5	8.09	41-20N	68-20W	1501.0	42.6	2251.4	51.2
6	6.25	41-00N	67-40W	**1802.1**	**47.6**	**2703.1**	**57.4**
7	4.19	41-00N	68-40W	2103.2	50.7	3154.8	60.9
8	2.43	41-20N	68-40W	2402.8	52.6	3604.2	63.2
9	2.17	41-20N	67-20W	**2702.4**	**54.5**	4053.5	65.2

* A simple working definition of effort is Sweep Width times trackline miles. In the above example, the effort number represents the amount of area (in square miles) contained within the bounded cell described by the corner points, multiplied by the coverage factor. Coverage is a function of sweep width and track space; C = W/S. The smaller the track spacing, the higher the coverage factor and hence the greater the amount of effort needed to cover the same area.

Coverage factor of 1.0
(POD of 78%)

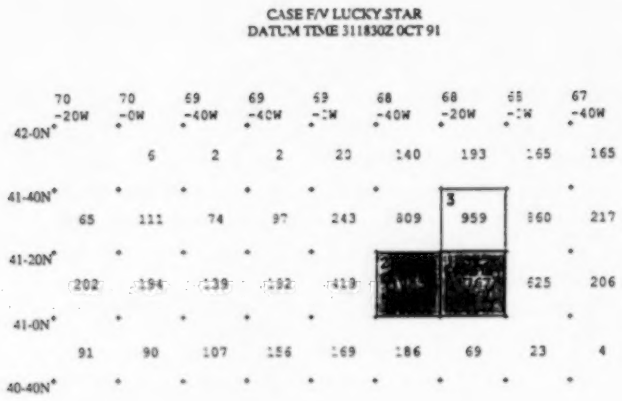
Top 3 cells 901.8 SqNM
POS = POA x POD

POA top 3 cells = 38.09
29.7 = 38.09 x .78

Coverage Factor of 1.5
(POD of 94%)

Top 2 cells 903.3 SqNM
POS = POA x POD

POA top 2 cells = 28.5
26.7 = 28.5 x .94



EXAMPLE 1: Compare Efforts of Approximately 900 SqNM.

In this case, one would be better served to search the area contained by the top three cells, POS of 29.7, with a lower POD (.78) than to search the area in the top two cells, POS of 26.7, with the higher POD (.94).

Coverage factor of 1.0
(POD of 78%)

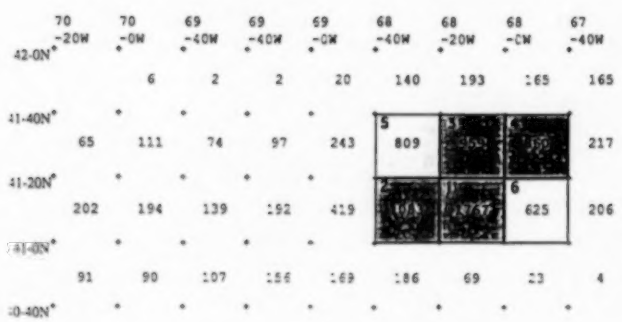
Top 6 cells 1802.1SqNM
POS = POA x POD

POA top 6 cells = 61.03
47.6 = 61.03 x .78

Coverage Factor of 1.5
(POD of 94%)

Top 4 cells 1802.1SqNM
POS = POA x POD

POA top 4 cells = 46.69
43.9 = 46.69 x .94



EXAMPLE 2: Compare Efforts of Approximately 1800 SqNM.

In this case, one would be better served to search the area contained by the top six cells, POS of 47.6, with a lower POD (.78) than to search the area in the top four cells, POS of 43.9, with the higher POD (.94).

Coverage factor of 1.0
(POD of 78%)

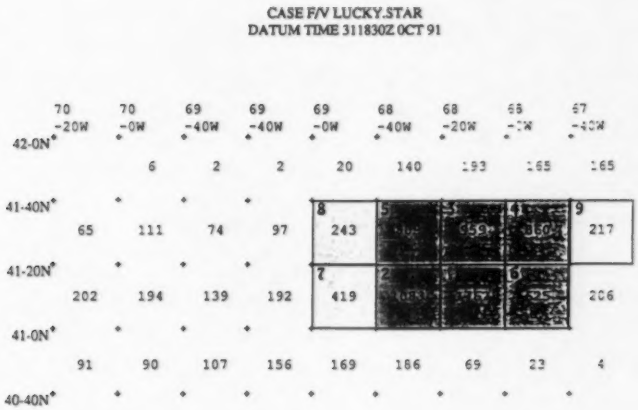
Top 9 cells 2702.4
POS = POA x POD

POA top 9 cells = 69.82
54.5 = 69.82 x .78

Coverage Factor of 1.5
(POD of 94%)

Top 6 cells 2703.1
POS = POA x POD

POA top 6 cells = 61.03
57.4 = 61.03 x .94



EXAMPLE 3: Compare Efforts of Approximately 2700 SqNM.

In this case, one is better served searching the area contained by the top six cells, POS of 57.4, with a higher POD (.94) than searching the area in the top nine cells, POS of 54.5, with the lower POD (.78). This happens because the probability of finding the search target in cells 7,8 and 9 has decreased to the point where it is more productive to search the smaller area, cells 1-6, with a higher POD (closer track spacing).

So, what's so good about Probability of Success... a whole lot. Although POD has been in the search planning vocabulary and used with the manual search planning method for many years, POS provides a much greater measure of search quality. The manual solution can incorporate POA and POS, however, it does so in a way that is hidden from the search planner. POA and POS were not used by search planners prior to the advent of CASP because there was no practical way to compute them manually if you do not search the exact Optimum Search Area generated by the Total Probable Error solution and safety factors (remember Figure 2 - 64% POA). Since we rarely search the exact area, the POA was not computable and hence was ignored! This left the unfortunate, and incorrect, impression that POD is *THE statistic* in terms of measuring search effectiveness. It is not. As previously stated, POS is a better measure of overall search quality/ effectiveness. It combines the Probability of Area factor <containment> and the POD factor <coverage>.

CASP is designed to provide a search plan which optimizes POS. However, caution must be used when using CASP to develop a search plan. It may optimize POS without regard to safety by overlapping search areas to get redundant coverage over high probability cells. This is tantamount to putting two search units in the same area at the same time. This may contribute to an accident. In these cases, the controller must establish separate areas and assign search resources to ensure safety. CASP II, the next generation program, will correct the overlapping problem. ***o/s***

STATION STUDY IMPLEMENTATION PROGRESS: SITREP THREE

By: LT G. R. Johnson, G-N-1

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1. SITUATION:

A. The Station Study Implementation Staff (G-N-1) is entering its final six months. Dozens of changes have been made to reduce overhead work and improve customer service (both for the public and CG personnel).

B. Data collected from field units indicates substantial changes in attitudes and workload. Good progress being made, additional steps for continuous improvements are needed.

2. ACTION TAKEN (HIGHLIGHTS)

A. Dictionary of Activities. Dictionary of Activity Survey Results. In September 92, we asked the crews of 75 stations to tell us how they spent an "average" August workweek. 57 of the 75 had participated in the Sept 91 survey, additional units were prototype stations not included in the original sample. Sept 92 versus Sept 91 highlights:

* **Personnel and finance administration were down by about 15% each.** Stations, groups and districts contributed to the reductions of administrative work through priority shifts, increased support, and local initiatives. XPOs, who recorded the greatest admin reductions, generally reinvested their time saved in training. **XPOs increased their training efforts by 30%. Training for all personnel at all stations increased to over 8% of total station effort, up more than 10% from '91.**

Districts 5 and 9 led the way in total administration reduction, with group single point accounting and PDR removal most significant among many initiatives. Districts 1 and 11 also achieved 20+% reductions in financial administration.

We expect more of the same as admin reduction initiatives mature and are implemented service wide.

* Mission performance remained steady at about 30% of total station effort--about 23% in operations--direct customer service--and 7% in non-training mission support activities.

* The reported "workweek" came down only 3% overall, With Districts 8, 5 and 9 recording 15%, 8% and 4% reductions respectively. District 8 also recorded the lowest average August "workweek" at 77.6 hours. Congratulations! (Remember, "workweek" includes all time aboard the unit.)

The Dictionary of Activity Survey has been invaluable in measuring station workload profiles and monitoring the impact of various initiatives. The survey will be administered again in Sept 93, allowing a comparison of improvements made.

B. Station and Group Relevelling Plan.

Search and Rescue Division's Station and Group Relevelling Plans are under active review within HQ. These plans remain a very high priority. Prototype group commanders reviewed the group plan in late March when they convened to address groups role and mission issues.

C. Prototype.

Our contractor has processed the survey data through December 92 and data analysis is beginning. Prototype units should keep up the excellent work. Your efforts are producing decision critical information, available nowhere else. This will be over by summer's end.

D. Training.

* **Video tapes** along with corresponding workbooks, on UCMJ and Code of Conduct are being copied for distribution to all stations and groups. Result - standardized training throughout the small boat community on this non-operational topic. Other required training topics which can be

delivered in the same manner continue to be identified. A joint NRS/N-1 video tape is planned - topic to be determined.

* Work continues on the **Station Training Guide**. The guide will include required topics, outline format lesson plans, and resources available (including video tapes to support training). This comprehensive effort will provide a baseline for required training at all stations.

E. Reducing Administrative Overhead. Initiatives continue at all levels to reduce administrative workload at operational units. Examples include:

* **Personnel Manual changes** - Published and pending changes include eliminating separate reports for civil arrest for both personnel and security reasons, and the requirement to notify a member in writing if they are denied specific off duty employment. Groups will be responsible for the administrative workload associated with indebtedness, nonsupport of dependents, and members who exceed maximum allowable weight standards. Stations will provide sufficient information via phone, e-mail, rapid draft or other informal means for preparation of necessary correspondence and CG-3307s.

* **Maintenance of Health Records** - Change 5 to the Medical Manual, COMDTINST M6000.1B tasked the unit HS (or in most cases the group HS) with all administrative maintenance of health records, filing of documents, and ensuring records are complete. Stations will retain responsibility for the security of records.

* **Maximum allowable weight standards** - A draft change to COMDTINST 1020.8C is being written. The new instruction will likely state that it is preferable, but not mandatory, for members to be weighed during their birth month. Annual weigh-ins will continue to be a requirement, but there will be more flexibility in the timing of these weigh-ins.

* **Urinalysis** - A change to the program is expected to state that units below the group level will not be required to conduct their own urinalysis program. A urinalysis coordinator from the group will make random visits to a unit. This coordinator will be responsible for custody and administrative work associated with urinalysis testing. Units will be responsible for appointing observers.

* Comments have been received by several prototype units on the **Standard Organization Manual** developed by G-N-1. Comments were favorable and insightful. These are being incorporated into a final version.

* A change to the COMDTINST governing **PDRs** is in the concurrent clearance stage. This change is expected to no longer mandate a format or content for the unit PDR. Also expected, is language encouraging groups to maintain unit PDRs for subordinate units (already happening in D5 and D9).

* Group Milwaukee: Almost two years ago, Group Milwaukee instituted a new method of completing **contract medical care claim forms.** Members fill out the claim form on their initial visit to the provider. The claim form and invoice are then sent to the Group HS who signs as the command representative. Some changes to the claim form are needed to expand this initiative, but it saves a great deal of time at the station with a moderate increase in workload for the Group HS.

* **Directives Manual** - Signed by G-T. This is a critical step in efforts to reduce administrative tasking. Provisions for mandatory impact assessment and facility manager review should reduce amount of tasking to stations. Success of this manual will be measured by tasking a station doesn't receive rather than removal of tasks already in place.

F. Personnel.

* Several policy changes affecting **non-rate assignment and management** are being developed: A standard assignment policy CG wide for non-rates. Changes to the assignment process of new recruits, centralizing these assignments at CGHQ rather than having recruits choose. Consideration of generic non-rates rather than SAs and FAs.

* During the next six months G-PE-2 will be testing the new assignment policy for recruits. Part of this test involves a block on the recruits ADC stating whether or not they are weapons qualified. **G-PE-2 will test assigning only weapons-qualified recruits to stations and WPBs.**

G. Inspections

* MLC Compliance Inspectors have developed a standard MLCLANT/MLCPAC Compliance Inspection checklist. Checklist will be oriented toward type of unit rather than one checklist for all units.

* Both MLC Inspection Teams have expressed

an **"assist" versus "inspect" philosophy.** Feedback from field indicates the new approach really does help stations.

* Both MLC Compliance Inspection Teams will test visiting an entire group, rather than single units within the group spread over a two year cycle. A consolidated inspection report will contain information on how well the group is supporting its subordinate units. Groups Astoria (2nd qtr 93) and Key West (3rd qtr 93) are the test sites.

3. G-N-1 FUTURE PLANS:

A. Continue efforts in areas which will bring the largest impact to customers (groups/stations/public).

B. Continue documentation of efforts, both within G-N-1 staff and field initiatives.

C. Begin transfer of remaining issues/initiatives to cognizant CGHQ program managers. *o/s*

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SARMIS: The Next Generation

By: LT Bob Patton, G-NRS-1

What's that you say? You don't enjoy doing SARMIS? Fear not! There is a glimmer of hope on the data processing horizon!

Our long term plans for SARMIS include a complete system rewrite. The new SARMIS system will be integrated and user friendly. The database will be on a computer at the Operations Systems Center in Martinsburg, WV.

Under the new system, you won't have to "fill out" SARMIS reports. All the information we need for SARMIS will be taken from information you enter in the Operations Information System (OIS). As you recall, OIS will be prototyped this summer at Group Long Island Sound. OIS is designed to improve group/station command and control and reduce your time spent doing reports during and after sorties.

The SARMIS database will be integrated with other CG information systems to get rid of redundancy and increase the kinds of information available. All units will be able to get information about their operations directly from the SARMIS database.

These are big plans – these kinds of changes won't happen overnight – or even next year. As we get closer to designing the new system, we'll be asking for your help. Together we can make a system that really works! *o/s*

The Operational Information System (OIS) Project

By LT Pete Marsh, Research and Development Center

The Research and Development Center is applying some of the latest technology to Coast Guard operations as part of the Operational Information System (OIS) project. This concept demonstration project will include computers with geographic displays in shoreside command centers and aboard boats. The computers have the ability to share electronic case folders with other command centers and resources over data communications networks that are invisible to the end user. OIS will also integrate existing and future systems for the end user, including SARMIS, LEIS II, Abstract of Operations, SITREPs, 4100 boarding forms, case folders, and logs. Any information entered in OIS will not have to be reentered manually into these other systems, since OIS will feed it to them "automatically." There are three primary objectives:

- Eliminate redundant reporting of facts about operations.
- Improve command and control.
- Provide information to field personnel in a more timely, accurate manner.

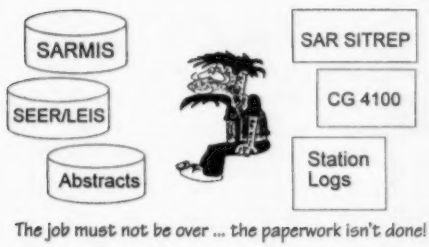

Figure (1) System Purpose

The key to OIS is not the technology. Most important is the "business re-engineering approach" to applying the technology. This involved users from the beginning of the project to focus the design on solving operational problems that are really out there. The OIS User Group was formed with the help of the Station Staffing Study Implementation Team (G-N-1) at Headquarters. There are 11 members representing all but two districts and a broad part of the spectrum of operational personnel: a D7 boarding officer and boat engineer, a D1 boarding officer and coxswain, a D13 surfman, a D5 Group OPCEN Senior Duty Officer, a D11 OPCEN controller, a D11 Group Surface Ops Officer, a D9 Station OIC, a D1 Station OIC, and others. The User Group has met five times, starting in April 1992, to help design the system and review the first two prototypes.

User involvement doesn't stop there. Group Long Island Sound, New Haven, CT, has volunteered to act as a concept testbed during the summer 1993 SAR season, to test the system in actual field usage. The testbed will involve the Group and its three stations: Eatons Neck, New Haven, and New London. Each station has two 41' UTB's and one non-standard boat, with crews ranging from 20 to 45 personnel. The system will get a workout: these stations average around 500 SAR cases each and 350 LE boardings per year, most concentrated between April and October.

What's in the command centers?

The key to OIS is the electronic case folder. It includes screens for describing vessels, people, initial case facts, weather info, and other items that we deal with every day. It also includes checklists for handling each of the different incident types, chrono logs, listings for all resources (CG and non-CG) in your OPAREA, and electronic charts of various types (nautical charts, topo sheets, aeronautical charts, and city maps are all available). Data collected in this case folder can be manipulated like never before. With the click of a mouse, the

controller can send a copy of the case folder to any other command center or mobile resource that has the system. For units that don't have it, it will automatically generate SITREPs.

Controllers will be able to tell the status of resources and cases with a glance at the screen. An electronic chart will have an icon (symbol) representing each resource and each case, so that the user can just click on one to bring up a screen with the resource status or the case folder.

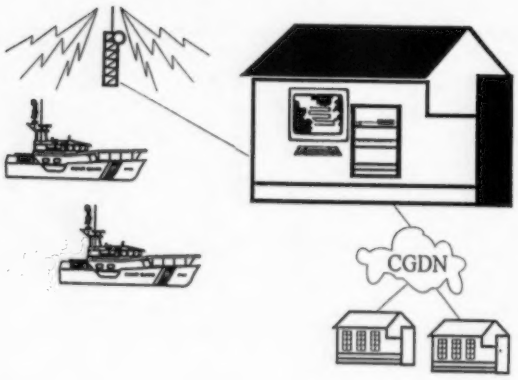

Figure (2) Command Center System

The prototype will have some SAR planning capability, based on what's available now in the GDOC (Geographic Display Operations Computer) and JOTS (Joint Operational Tactical System) systems that some command centers are using. But the OIS team is working closely with the CASP rewrite project to link the two systems seamlessly, so that a user can kick off a CASP run by picking from the OIS menu and defining the search parameters in a dialog box. Other systems, such as AMVER and LEIS II, could be integrated in the same fashion.

At the end of a case, the user will simply make a menu pick to tell the computer to start its Operational Reporting program. The system will then analyze the electronic case folder and generate reports such as SITREPs, SARMIS, and LEIS II. The user will only need to review the computer-generated reports, supply any data items that are missing, and resolve any conflicts. Thus, the case folder checks itself for completeness.

The computer being used in the shoreside command center during the prototype is a Hewlett-Packard 9000/750 Unix workstation from the Navy's TAC-III contract. It runs the Navy's JOTS software which is otherwise known as NTCS-A (Naval Tactical Command System Ashore) and JVIDS (Joint Visually Integrated Display System). It is also the basis of the Coast Guard's Shipboard Command and Control System (SCCS), being tested aboard medium and high endurance cutters. This is a high-performance workstation, with a graphical user interface based on X Windows and Motif, which is similar to Apple's Macintosh and Microsoft's Windows. This helps make the computer much easier to use.

What's on the boats?

Each UTB will get several new pieces of equipment. The main component will be a computer mounted on the chart table. It will have screens very similar to those on the TAC-III workstation in the command center, with much of the same information. It can send case folders to the shoreside computer or receive them from it over a cellular phone and modem, so the coxswain and command center will both have the most up-to-date information.

But this computer has legs -- lift it out of its docking station on the chart table, and start writing on it! That's right, it's a pen-based computer which is shaped like a clipboard, weighs about three pounds, and allows you to write directly on its screen. It can translate block printed characters (not cursive) into computer text (ASCII), or you can store your scribblings on the hard disk as "ink," a new type of computer data designed to represent hand-drawn images. The boarding officer can carry it aboard the boarded vessel, use its screens to capture all the 4100 information, and print out a boarding report for the boater about the size of a cash-register tape. When the boat gets back in, the data will already be waiting there, prepared for LEIS II (the replacement for SEER) and the district hearing officer. Just review the reports for errors, press a button, and they're sent.

The boat will also have a second computer, running navigation quality electronic charts. A GPS receiver will be plugged in, and the boat's position will be displayed on the screen on the appropriate scale chart. The position can be updated as frequently as once per second, and is accurate to within a hundred meters (ten meters when the new differential GPS is

available). These positions can also be reported to the pen-based computer and to the command center, replacing ops normal reports and enabling controllers to know resource status much more reliably than they do now.

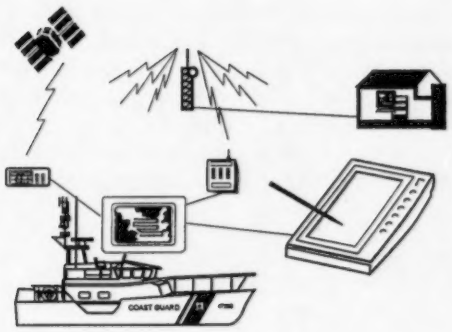

Figure (3) Boat System

What happens from here?

The R&D testbed in Long Island Sound will run from August 1993 to January 1994. This testbed covers Phase 1 of the project, the Group/Station phase. At the same time, the R&D Center is starting work on Phase 2, the District/Helo phase. This phase will test the Phase 1 functionality in the district command center, and extend it to helicopters. The major concerns of human factors, space, and weight are even more pronounced here than in the small boat environment, so the engineers will be challenged to see if it's feasible to integrate OIS components into the airframe.

Even as the testbed gears up, headquarters program managers are not adopting a wait and see attitude. Support for the concept is strong, and the OIS Guidance Team, with members from the four operating programs and G-T, is preparing a Management Plan and drafting Resource Change Proposals (RCPs) for continued work on OIS.

This article would not be complete without giving credit to the fantastic group of people who formed the OIS User Group and helped design the system. You can see by the billets that this was a group of real users, not staff personnel masquerading as users. Rest assured, the field was well represented!

o/s

Name:	Unit:	Position:
MK2 Danny Wong	Base Miami Beach	Boat eng/Boarding Officer (BO)
BM2 Pete Winters	Sta Shinnecock	Coxn/BO (now at Sta Montauk)
BM1 Bob Sloan	Sta Coos Bay	Coxn/BO (now aboard CGC WHITE SUMAC)
RM1 Rob Zabroky	Gru Corpus Christi	RSM
QMC Dave Umberger	Gru Cape May	Senior ODO
BMC Skip Bowen	Sta New Haven	OIC
BMCS Bill Ferroli	Sta Calumet Harbor	OIC (now Aops, Gru Milwaukee)
BMCM Marv Gebers	CGHQ (G-N-1)	Station Study Staff
CWO Ken Stuber	Gru Humboldt Bay	Surface Ops (PCO, Sta Humboldt Bay)
LT John Davis	CGD11 (opc)	Controller (PCO, CGC EDISTO)
LT Steve Godfrey	CGHQ (G-NRS)	IRM staff (relieved by LCDR Steve White)

SARMIS/ALDIST

By: LCDR Steven White, G-NRS-1

The following is a reprint of a recent ALDIST.

References:
a. Search and Rescue Management Information System (COMDTINST M5230.10A)
b. Coast Guard Addendum to the National Search and Rescue Manual (COMDTINST M16130.2A)

The computer assisted search planning (CASP) and automated mutual-assistance vessel rescue (AMVER) systems are widely used by RCC'S. However, the SARMIS database doesn't reflect these systems' usage or performance. We would like to reemphasize the use of CASP and AMVER special study codes and ask that RCC'S pay particular attention when completing the special studies section of the SARMIS data report. Refer to page C-18 of reference (a) for information pertaining to the current list of special studies codes used with SARMIS.

CASP

The special studies code "CA" shall no longer be used and shall be deleted from the list. Instead, enter the following codes in the special studies section of the SARMIS report:

"CN"	CASP used, object(s) not located.
"CI"	CASP used, object(s) located inside a CASP replication block.
"CO"	CASP used, object(s) located outside all CASP replication blocks.

AMVER

Enter the code "AM" (i.e., if AMVER was used) in the special studies section of the SARMIS report.

AMIO.

Annually since 1981, the U.S. Coast Guard has interdicted an increasing number of alien migrants. Many migrants have been interdicted along the southeast U.S. coast, with recently increasing numbers along the western U.S. coast and Hawaii. Migrant interdiction efforts involve a merging of SAR and L/E missions. The safety of life at sea should always take precedence over the enforcement of laws. However, routine interdiction of vessels of unknown seaworthiness does not automatically classify an incident as SAR. While most SAR cases are in response to calls for assistance, the CG happens upon the majority of alien interdiction cases during directed patrols. Standard reporting procedures for SARMIS will help ensure accurate statistics and effective resource management.

(1) Units shall claim a SAR case when responding to alien interdiction only when the nature of the response is SAR related. Examples of SAR related responses include:

(a) Any situation where a life is at risk.

(b) Incidents where alien migrants are removed from a vessel which has been determined unsafe or unseaworthy and in apparent distress.

(c) Incidents where resources are devoted to any stage of a rescue of aliens in inner tubes, rafts, or disabled boats.

(d) Incidents where a search is conducted based on a report of aliens in inner tubes, rafts, or disabled boats.

(e) Any medical evacuation (MEDEVAC) involving an alien.

(2) The transport of aliens not rescued (from danger or due to poor health) and are being delivered to INS or repatriated to the applicable country does not, in itself, warrant claiming a SAR case.

(3) SMC's shall claim a SAR case if they make a significant contribution to coordinating the SAR aspect of an interdiction.

(4) Units shall complete SARMIS in accordance with the following:

(a) Enter the code "AI" (alien interdiction) in the special studies section of the SARMIS report.

(b) Choose code "2" (illegal aliens) in the L/E reference codes section of the SARMIS report.

These changes will be reflected in the next releases of references (a) and (b).

POCs are LT Bob Patton and CDR Doug Perkins G-NRS, Telephone (202) 267-1579, or Fax (202) 267-4418.

ISARC/Canadian CG Experiment

By: DR. J. E. Dick USCG R&D Center

The Research and Development Center Improvement of Search and Rescue Capabilities (ISARC) project participated in a joint experiment with the Canadian Coast Guard. The objective of the experiment was to compare several methods of deriving sea surface currents. Recent experiments by both the US and Canadian Coast Guards indicate that reductions in drift error can be achieved through remote sensing.

Remote sensing techniques vary considerably in complexity, area of coverage, accuracy, and cost. Three distinct methods of remote sensing were tested during this experiment. Satellite Imagery, Single HF-GW radar derived surface currents, and drifter buoys were compared with existing Canadian Search and Rescue Planning (CANSARP) drift models.

Since 1991, both the US and Canadian Coast Guards have been evaluating various remote sensing techniques to assess their effectiveness in measuring sea surface currents. This research is aimed at improving drift predictions of computerized SAR planning methods in an effort to reduce search time and area. One of the main difficulties with marine searches is the search area expansion caused by drifting targets. From the instant of the last known position, the search area begins to expand and move in a highly variable manner dependent on environmental conditions and the accuracy with which these conditions can be estimated. The size and accurate location of the search area are directly related to the accuracy of the current data used to predict the drift.

The present method of generating surface current information for CASP is through averaged historical and forecast environmental data or "on scene" environmental data. Accurate "on scene" data should always be used when available, because relatively minor differences in the estimated magnitude and direction of the sea surface current can greatly affect the predicted location of the target. Even well established currents can vary in location, direction, and intensity. Weather forecasts are sometimes inaccurate, so accurate "on scene" environmental data can vastly improve search area predictions.

The joint US/Canadian Coast Guard experiment occurred off the coast of Cape Race, Newfoundland from 20 October to 1 December 1992. The experiment involved deployment of two ARGOS drifter buoys provided by the Canadian Department of Fisheries and Oceans (DFO). The drifter tracks recorded by DFO were compared with estimates of sea surface current obtained from a single HF-GW radar. ISARC provided remotely sensed Advanced Very High Resolution Radiometry (AVHRR) images acquired by the satellite receiving station located at the R & D Center.

ISARC is presently integrating programs for estimating sea surface currents from sequential AVHRR images into its data processing and image analysis software. The surface current software, developed by Dr. Katherine Kelly of Woods Hole Oceanographic Institution (WHOI), uses the "heat inversion equation" to estimate surface currents. Unlike other processes for estimating currents from satellite imagery based on pattern recognition of the movement of thermal features between sequential images, the heat inversion method sets velocity information from image pairs using a conservation of temperature equation. An added attraction of Kelly's method is its ability to use data from other sources, such as drifting buoys, in the final estimates of surface currents.

When ISARC implements Kelly's programs in existing software, analysis of sea surface currents will begin. The currents calculated by the heat inversion technique will be compared to the drifter tracks from the ARGOS buoys and with the estimates obtained from the single HF-GW radar. Comparison of satellite imagery, single HF-GW radar, CANSARP drift models, and drifter buoys will provide much needed information about the effectiveness and accuracy of each technique for obtaining surface currents. The ISARC project expects to be able to provide a highly reliable source of near real-time ocean current data for the CASP system and the search planners. *o/s*

New Decals For EPIRBS

A new decal will be sent to all EPIRB owners that have registered with NOAA. The purpose of the decal is to provide proof of registration and support U.S. Coast Guard inspections.

The new decal is one inch by two inches in size, includes the NOAA emblem, and states "COSPAS-SARSAT Proof of Registration." Each decal will include the EPIRB's unique 15 Character hexadecimal identification code, the registration expiration date, and the vessel's eight digit registration number.

EPIRB owners are to affix the new decal to their unit as close to the manufacturer's hexadecimal code as practical. An example of the new registration decal is shown below.

NOAA will begin distributing the decals in April 1993, and expects to complete the delivery by September 1993, to over 14,000 EPIRB owners. EPIRB owners are reminded that EPIRB registration is important because it provides information to search and rescue forces:

(1) to intervene for an unlocated distress signal,

(2) to respond more quickly and be better prepared for an actual vessel emergency, and

(3) to quickly identify and shut off false alarms.

For additional information, contact NOAA, NESDIS, Beacon registration Database Manager, Ms. Michelle Winston at

TEL: (301) 763-4680

FAX: (301) 568-8649 *ols*

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Search & Rescue Division (G-NRS)

TELEPHONE:	COMM (202) 267-XXXX	FAX 267-4418	E-MAIL
Division Chief	CAPT M. F. Cowan	1551	NRS/G-NRS
Asst Chief	CDR B. J. Stoppe Jr.	1085	NRSa/G-NRS
Secretary	Ms. T. L. Stevenson	1896	T.STEVENSON/G-NRS
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D1, 2, 5, 9, & Group Liaison/Mgr. SAR School, SAR Manual,SAR Addendum	LCDR W. D. Lee	2275	D.LEE/G-NRS.
Closure Guide; Planning Analyst	Mr. R. R. Schaefer	1559	R.SCHAEFER/G-NRS
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SAR Statistics, Data Analyst, Computer System Mgr.	Ms. S. M. Holden	1089	S.HOLDEN/G-NRS
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AMVER MARITIME RELATIONS SECTION, Governors Island, New York

Section Chief	Mr. R. T. Kenney	FTS 664-7764	R.KENNEY/G-NRS(AMR)
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Administrative Asst.	Ms. E. R. Mercado	FTS 664-7764	E.MERCADO/G-NRS

Dear On Scene Editor,

Commandant (G-NRS-2)
Editor, ON SCENE
U.S. Coast Guard Headquarters
2100 Second Street, S.W.
Washington, D.C. 20593

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NOTES

NOTES

The deadline for submitting articles to appear in the next issue of ON SCENE is 30 JUNE 93. Please try to keep them under three pages if at all possible. If you submit an article for publication and have it typed on the standard terminal, it will save us typing time. Copy the submission on a 5-1/4" or 8" floppy disk and mail it with a printed copy. ***Pictures are most welcome.*** *Please tell us if you wish the disk to be returned. Arrangements can also be made to accept articles over a modem.*

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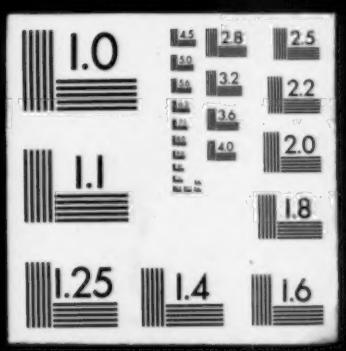
A	3	3	3	3	3	3	1	3	2	2	1	1	3	3	1	1	1	1	1		5	1				
B		5	25	1	25	10		10	3	2	2	1	2	10	1	2	1	20	1	5						
C	5	6	1	3	1	1	1		3	1		1	1		2	1		1		1			1			1
D	1			3		1		3		1	1	1	1								1	2	2	2		
E										1	1	1		1	1			1								
F	1	1	1							1	1		1													
G	1																									
H																										

NON-STANDARD DISTRIBUTION: CG-39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